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SYLLIS SAVIGNY IN LAMARCK, 1818 (POLYCHAETA: SYLLIDAE: SYLLINAE) FROM CUBA, THE GULF OF MEXICO, FLORIDA AND NORTH CAROLINA, WITH A REVISION OF SEVERAL SPECIES DESCRIBED BY VERRILL

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ABSTRACT

A study of specimens belonging to the genus *Syllis* (s.l.) (Polychaeta, Syllidae), principally from Cuba, and also the Gulf of Mexico, Florida and North Carolina, was carried out. The taxonomy of the genus is discussed. The following new species are described: *S. alosae, S. sardai, S. barbata, S. ortizi, S. danieli,* and *S. maryae*; the following species are new to the Cuban fauna: *S. corallicoloides* Augener, 1922; *S. alternata* Moore, 1908; *S. garciai* (Campoy, 1982); *S. broomensis* (Hartmann-Schröder, 1979); *S. beneliahui* (Campoy, 1982); *S. corallicola* Verrill, 1900; *S. lutea* (Hartmann-Schröder, 1960); and *S. hyalina* Grube, 1863. The species *S. garciai* and *S. beneliahui* are also new to the Caribbean and Gulf of Mexico areas. Several species from Bermuda and New England described by Verrill (1875; 1900) are revised.

This is the sixth paper treating syllids collected in Cuba during the "Primera Expedición Cubano-Española a la Isla de la Juventud (Isle of Pines) y Archipiélago de los Canarreos," and elswhere in the Caribbean Sea and Gulf of Mexico, San Martín (1990; 1991a; 1991b; 1991c; 1991d). The material from the Gulf of Mexico was collected for the U.S. Department of the Interior, Mineral Management Services, contract number AA551-CT9-35, by Barry A. Vittor and Associates, Incorporated. This material is deposited in the Smithsonian Institution, National Museum of Natural History (USNM). The material from North Carolina and Florida was loaned by the Zoological Museum of the University of Copenhagen (ZMUC), mostly collected by Dr. M. E. Petersen during 1961–1963.

Types and other specimens available for study are deposited in the two above-mentioned museums, in the Museo Nacional de Ciencias Naturales de Madrid (MNCNM), Spain, and in my collection.

Measurements refer to the holotype or the largest specimen studied; width was measured at the proventricular level, without cirri, parapodia or setae.

Microscope mounts in glycerine jelly were made of some complete specimens and some parapodia. Observations, drawings and measurements were made using a compound microscope with differential interference contrast optics (Nomarsky). Drawings were made by means of a camera-lucida drawing tube.

A more extensive introduction and additional information about methods and materials have been given in the previous papers, especially in San Martín et al. (1986).

Several families of polychaetes collected during the above-mentioned expedition have been studied (San Martín et al., 1986; San Martín, 1986a; 1986b; in press; San Martín and Major, 1988; San Martín and Gómez Esteban, in press), including the syllid subfamilies Exogoninae, Eusyllinae and Syllinae (except the genus *Syllis*). This report deals with the genus *Syllis,* a complicated and difficult genus, with a large number of described species. Perkins and Savage (1975), Perkins (1981), Uebelacker (1982; 1984) and Ibarzábal (1986; 1988) were consulted for the new records.

Family Syllidae Grube, 1850
Subfamily Syllinae Grube, 1850
Genus *Syllis* Savigny in Lamarck, 1818
Ioida Johnston, 1840
Lalage F. Müller, 1858
Trichosyllis Schmarda, 1861
Gnatosyllis Schmarda, 1861
Aporosyllis Quatrefages, 1865
Pagenstecheria Quatrefages, 1865
Chaetosyllis Malmgren, 1867
Typosyllis Langerhans, 1879
Ehlersia Quatrefages, 1865 (in part)
Langerhansia Czerniavsky, 1881
Thoe Kinberg, 1866

Type-species.—*Syllis monilaris* Savigny, 1818.

Diagnosis.—Body cylindrical, elongated, with numerous segments. Prostomium with 4 eyes and, sometimes, 2 additional anterior eyespots; exceptionally without eyes. Palps long, broad, free on almost all their length, fused on bases, leaving a dorsal scar. Three antennae. Two pairs of tentacular cirri. Two anal cirri and short, medial, inarticulate appendage. Dorsal cirri on each parapodium. All appendages (antennae, tentacular, dorsal, and anal cirri) moniliform, strongly articulated. Parapodia without gills. Ventral cirri small, digitiform, present on all parapodia. Compound setae heterogomph, usually with blades falcigerous; sometimes some blades elongated, forming spinigerous setae, accompanying the falcigers; also sometimes on midbody with thick simple setae derived from falcigers. Solitary dorsal and ventral capillary simple setae usually on posterior parapodia. Several thin aciculae in anterior parapodia; number of aciculae decreasing progressively and increasing in thickness, with usually only one thick acicula posteriorly. Reproduction by male or female sexual stolons (schizogamic scissiparous).

Taxonomic Remarks.—*Syllis* is one of most difficult genera taxonomically of the Syllidae due to: the great diversity of the genus, with a large number of described species, the lack of good and detailed descriptions following uniform patterns, the lack of revisionary studies and redescriptions of old species, and the confusion existing in the generic nomenclature. As a result, *Syllis* is a genus with problems of nomenclature, with many described species and, for the most part, the descriptions are inadequate and incomplete. According to Campoy (1982), most of the described species are actually indeterminable.

Syllis was created by Savigny (1818, in Lamarck). Langerhans (1879) split the genus into four subgenera: *Haplosyllis* Langerhans, with only simple setae; *Typosyllis* Langerhans, with compound falcigers; *Syllis* Savigny in Lamarck, with some thick simple setae, together with compound falcigers; and *Ehlersia* Quatrefages, with spinigerous setae (see below) and falcigers. Fauvel (1923) adopted the division by Langerhans; followed by Bellan (1964), Amoureux (1972a; 1972b); Haswell (1920); Péres (1954); Rullier (1963; 1972); Uschakov (1955). Many others considered each subgenus as a true genus, as Rioja (1962, and other papers); Laubier (1966); Westheide (1974) and Fauchald (1977a). Hartman (1959) proposed the change of *Ehlersia* ex. auct. to *Langerhansia* Czerniavsky, 1881; however, not all authors followed this proposal; many authors continued using the name *Ehlersia* and others used *Langerhansia,* either as a genus or as a subgenus.

The following authorities used the genus *Syllis* divided into four subgenera (*Haplosyllis, Syllis, Langerhansia* and *Typosyllis*): Cantone (1976); Day (1967; 1973); Gardiner (1976); Hartman (1959; 1969, and other papers); Imajima (1966) and Imajima and Hartman (1964). The following authorities used *Haplosyllis, Syllis, Langerhansia* and *Typosyllis* as true genera: Amoureux (1982); Amoureux et al. (1978); George (1979) and Campoy (1982). Furthermore, many other authors used different combinations. Augener (1913; 1918); Rioja (1941); and Verrill (1900) used *Haplosyllis* as a genus, and *Syllis* split into three subgenera, *Syllis, Typosyllis* and *Ehlersia.* Ben-Eliahu (1977) used *Langerhansia* as a genus, and *Haplosyllis, Typosyllis* and *Syllis* as subgenera of *Syllis.* Berkeley and Berkeley (1938), Cognetti (1957) and Pettibone (1963) used the genus *Syllis* not divided into any subgenera. Berkeley and Berkeley (1948) accepted *Ehlersia* as a subgenus. Hartmann-Schröder (1965; 1971; 1979, and later), and Gillandt (1979), used three genera, *Syllis, Haplosyllis* and *Typosyllis,* the last one divided into two subgenera: *Typosyllis* and *Langerhansia.* Finally, Dorsey and Phillips (1987) discussed the problem between *Typosyllis* and *Ehlersia,* and they considered the most accurate difference the relative lengths of the setal appendages.

San Martín (1984) proposed *Haplosyllis* as a separate genus, with relatively little relation with *Syllis.* In my opinion, the division of *Syllis* into *Typosyllis, Ehlersia* or *Langerhansia,* and *Syllis,* both as subgenera or genera, is an artificial division and it has been followed for practical reasons more than scientific ones.

There is an exception with the species *Ehlersia ferrugina* Langerhans, 1879, which does not agree with the diagnosis of *Syllis,* and perhaps it is even not a Syllinae, but an Eusyllinae; this species has a retractile appendage, perhaps a gill, under the dorsal cirri (Laubier, 1968; pers. obs.), and it reproduces by epigamy instead of schizogamy (pers. obs.).

The simple thick setae, present in a few species of *Syllis,* may have different origins: by fusion of blade and shaft, as in *S. gracilis,* or by loss of blade and shaft enlargement, as in *S. amica.* So, the presence of thick simple setae, which would define the subgenus *Syllis,* cannot be used as a generic or subgeneric character, but only as a specific character.

The presence of spinigerous setae is very conspicuous, and would define the subgenera *Ehlersia* or *Langerhansia.* However, anterior setigers of the species of *Syllis* with spinigerous setae usually lack them; progressively one or two falcigers are elongated and sometimes the teeth of the blade are progressively indistinct. According to Dorsey and Phillips (1987), the spinigerous setae of *Syllis* are not true spinigers, homologous to the spinigers of other polychaetes, as the nereidids, because they are only elongated falcigers; therefore, I propose the name "pseudospiniger" for this kind of setae in the genus *Syllis.* Posterior parapodia usually lack pseudospinigers.

All these considerations do not mean that *Syllis* must be considered as a homogeneous genus. There are many other characters which have not been described for most of the species of this genus, but could be useful for segregating *Syllis* into groups of species or subgenera. These characters are mainly three: the shape of the posterior aciculae, shape of the solitary simple dorsal setae, and the kind of reproductive stolon. A study of the stolons of several species of *Syllis* has been made by Estapé and San Martín (in press).

Identification of species is not easy. The main taxonomic characters are: 1) Length, width and number of setigers. Since the species of *Syllis* reproduce by sexual stolons, produced by modification of a number of posterior segments, these meristic data are only approximate. After detachment of the stolon, the specimen is shorter than before. 2) Number of eyes. Species of *Syllis* usually have four eyes,

but sometimes also two anterior eyespots; occasionally they are without eyes. However, lack of anterior eyespots is not a good character, because sometimes they are not visible after fixation. 3) Arrangement, length of dorsal cirri and number of joints. This is a very important character, because it influences the general appearance of the body. Usually, dorsal cirri of the first setiger are proportionally long and those of the second ones are short; typically, the remaining cirri alternate long and short, acquiring the maximum length about proventricular level, and becoming progressively shorter. However, in young specimens these differences are less marked than in adults, and they have proportionally much shorter dorsal cirri, provided with fewer articles. Sometimes it is not easy to see if one specimen is a juvenile of a species with long cirri or if it belongs to a small species with short dorsal cirri. 4) Relative lengths of pharynx and proventriculus; position of pharyngeal tooth and number of rows of muscle cells. These are good characters; however, length of pharynx and position of pharyngeal tooth may be modified by contraction, and the number of rows of muscle cells is only approximate. 5) Shape of posterior aciculae. The anterior parapodia have several similar aciculae, similar in all species. The parapodia of the posterior third of the body have usually a solitary, thick acicula, of one of the following four types: 1) with rounded, hollow tips (Fig. 1H); 2) acuminate (Fig. 1D); 3) straight, pointed, usually protruding from the parapodia (Fig. 10E); or 4) rounded, bent at a right angle (Fig. 9I). 5) Shape of dorsal and ventral simple capillary setae. Dorsal simple setae may be of two basic types: pin-shaped (most species), or truncate (Fig. 9K), both kinds usually bifid. Ventral simple setae have distal end similar to blades of ventral posterior compound setae, and therefore give little additional information. 6) Shape of compound setae. This is the most important character. Observations must be made carefully under high magnifications of a microscope provided with phase contrast or interference contrast optics (Nomarsky). Compound setae usually change, both in shape and length, progressively from anterior to posterior and from dorsal to ventral; there are some exceptions. Blades are longer and thinner more dorsally and more anteriorly, except for the pseudospinigers, which usually are longer in the midbody. The blades are usually bidentate, but sometimes, the proximal tooth is very small or absent. Details of the spines on the margin of the blades are very important. 7) Color pattern. Sometimes this is not perceptible after fixation, but when present the character is often useful.

Most of the oldest descriptions do not include information on gradation of the setae, shape of the posterior acicula and the shape of the simple dorsal setae. Furthermore, even in recent years, details of the setae have been described only for a small number of species.

KEY TO THE SPECIES OF *SYLLIS* COVERED (EXCLUDING VERRILL'S TYPES)

1a. Solitary posterior aciculae with rounded, hollow tips. (Fig. 1H, J) 2
1b. Solitary posterior aciculae different, not hollow in tips 3
2a. Compound setae strongly bidentate (Fig. 1E) ..... *S. prolifera* Krohn, 1852
2b. Compound setae unidentate and slightly bidentate (Fig. 1I) ..... *S.* cf. *vivipara* Krohn, 1869
3a. Solitary posterior aciculae straight, thick, protruding from parapodial lobes (Figs. 2H, 3D, 10C, E) 5
3b. Solitary posterior aciculae curved at tip, slender, not protruding from parapodial lobes (Fig. 6B, 9I) 4
4a. Solitary posterior aciculae with tips curved, acuminate (Figs. 1D, O, M; 4F; 5C, H; 7H; 8E) 11
4b. Solitary posterior aciculae distally rounded and bent, forming right angle at tip (Fig. 9I). Dorsal glands on some post-proventricular segments (Fig. 9A). Compound setae include pseudospinigers (Fig. 9B, C, G) ..... *S. maryae*, n. sp.

5a. Dorsal compound setae from midbody relatively short pseudospinigers with rounded tips (Fig. 2D). Dorsum usually with red horizontal double circles (*variegata* type) (Fig. 2A) ..... *S. alosae*, n. sp.
5b. Dorsal compound setae from midbody normal falcigers 6
6a. Long dorsal cirri of midbody similar in length to body width 7
6b. Long dorsal cirri of midbody longer than body width 10
7a. Solitary posterior aciculae very thick. Compound setae moderately bidentate, with fine, short spines on cutting margin ..... *S. gerlachi* (Hartmann-Schröder, 1960)
7b. Solitary posterior aciculae moderately thick (Fig. 3D) 8
8a. Compound setae strongly bidentate, provided with long, coarse spines on cutting margin (Fig. 3E). Without color ..... *S. sardai*, n. sp.
8b. Compound setae moderately bidentate, provided with thin spines on cutting margin (Fig. 1N) 9
9a. Anterior end and midbody strongly pigmented with one horizontal red double circle on dorsum of each segment. Dorsal cirri slender ..... *S. variegata* Grube, 1860
9b. Body not pigmented. Dorsal cirri short, thick, fusiform ..... *S. hyalina* Grube, 1863
10a. Superior compound setae from midbody with rounded close-set teeth. Anterior part of body usually with red pigmented bands or double circles red ..... *S. corallicoloides* Augener, 1922
10b. Compound setae with acute, separated teeth. Without color markings ..... *S. alternata* Moore, 1908
11a. Midbody with only simple setae formed by fusion of shafts and blades ..... *S. gracilis* Grube, 1840
11b. Shafts and blades not fused 12
12a. Dorsum with ciliated segmental bands. Dorsal cirri very short, except on first setiger (Fig. 4A) ..... *S. barbata*, n. sp.
12b. Dorsum without ciliated segmental bands 13
13a. Compound setae include falcigers and pseudospinigers 14
13b. Compound setae only falcigers 18
14a. Falcigers with long spines on cutting margin, reaching to level of proximal tooth (Fig. 5B, F) 15
14b. Falcigers with short or moderate spines on cutting margin 16
15a. Long dorsal cirri of midbody shorter than body width. Solitary dorsal simple setae thick, bifid (Fig. 5D) ..... *S. garciai* (Campoy, 1982)
15b. Long dorsal cirri of midbody similar to or longer than body width. Solitary dorsal simple setae slender and bidentate (Fig. 5G) ..... *S. broomensis* (Hartmann-Schröder, 1979)
16a. Long dorsal cirri of midbody distinctly longer than body width 17
16b. Long dorsal cirri of midbody slightly longer than body width. Pseudospinigers long and unidentate in midbody (Fig. 6A) ..... *S.* cf. *cornuta* Rathke, 1843
17a. Pseudospinigers in midbody short, bidentate, with both teeth similar (Fig. 1K) ..... *S. beneliahui* (Campoy, 1982)
17b. Pseudospinigers in midbody long, unidentate (Fig. 6D) ..... *S. mexicana* (Rioja, 1960)
18a. Compound setae of midbody with proximal teeth longer than distal ones, distal spines of cutting margin reaching or surpassing level of proximal teeth 19
18b. Compound setae of midbody with proximal teeth shorter than or equal to distal ones, spines of cutting margin not reaching level of proximal teeth 20
19a. Compound setae of posterior part of body massive; distal teeth curved, somewhat hooked, proximal teeth much longer than distal ones (Fig. 7G) ..... *S. ortizi*, n. sp.
19b. Compound setae not massive. Distal teeth not hooked, proximal teeth not much longer than distal ones (Fig. 5I) ..... *S. lutea* (Hartmann-Schröder, 1960)
20a. Long dorsal cirri much longer than body width. Dorsum usually with transverse red bands or double circles red anteriorly (type *variegata*). Compound setae of posterior half of body with proximal teeth similar in length to distal teeth, widely separate (Fig. 1A). Dorsal cirri with dark inclusions ..... *S. corallicola* Verrill, 1900
20b. Long dorsal cirri as long as body width or shorter. Without color markings. Dorsal cirri slender (Fig. 8A). Compound setae with spines of cutting margin coarse (Fig. 8B, F, G). Dorsal compound setae of midbody with both teeth very close to each other ..... *S. danieli*, n. sp.

Syllis prolifera Krohn, 1852
Figure 1E–H

Syllis prolifera Krohn, 1852:66, pl. 3, fig. 1.—San Martín, 1984:331, pls. 78, 79.
Syllis (Typosyllis) prolifera.—Fauvel, 1923:261, fig. 97a–g.—Ben-Eliahu, 1977:23.
Typosyllis prolifera.—Campoy, 1982:441, pls. 58a–j, 59a–l.

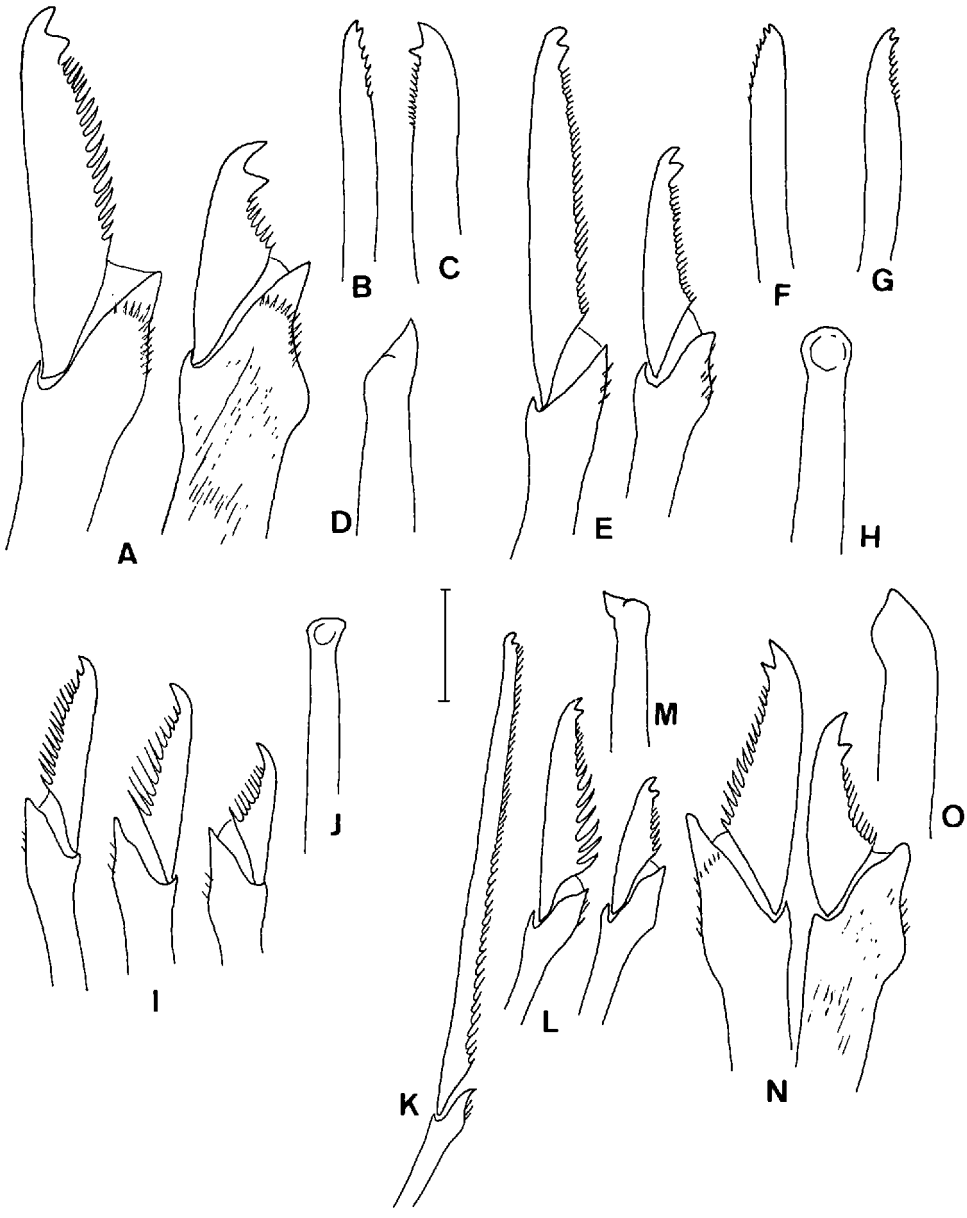

Figure 1. *Syllis corallicola.* A, compound setae, medial-posterior setiger; B, dorsal simple seta; C, ventral simple seta; D, acicula, posterior. *Syllis prolifera.* E, compound setae, midbody; F, dorsal simple seta; G, ventral simple seta; H, acicula, posterior. *Syllis* cf. *vivipara.* I, compound setae, midbody; J, acicula, posterior. *Syllis beneliahui.* K, pseudospiniger, midbody; L, falcigers, midbody; M, acicula, posterior. *Syllis hyalina.* N, compound setae, midbody; O, acicula, posterior. Scale: 10 μm.

Not *Typosyllis prolifera.*—Imajima, 1966:292, fig. 65a–n.
Not *Syllis* (*Typosyllis*) *prolifera.*—Uebelacker, 1984:30–150, fig. 30-146.
Syllis (*Typosyllis*) sp. D (in part).—Uebelacker, 1984:30–139, fig. 30-134.

Material Examined.—Cuba: Off Punta Pedernales, Isla de la Juventud; in living coral; 1.5 m depth; 6 specimens (USNM). Off Cayo Matías, Archipiélago de los Canarreos; *Stypopodium zonale*; 3 m depth; 3 specimens. Between Punta del Este, Isla de la Juventud, and Cayo Matías; *Halimeda* sp. in *Thalassia testudinum* beds; 3 m depth; 25 specimens (MNCNM). Off Cayo Matías; *Turbinaria tur-*

binata; 3 m depth; 4 specimens (MNCNM). Off Punta del Francés; Isla de la Juventud; algae; 4 m depth; 20 specimens. Off La Herradura, NW from La Havana; algae; 1–3 m depth; 2 specimens. Canal de los Vapores; Cayo Bocas de Alonso; hydroids on *Rhizophora mangle* roots; 0.5 m depth; 2 specimens. Between Punta del Este, Isla de la Juventud, and Cayo Matías; in coralline rock from rubble and pavement zone; 4 m depth; 1 specimen. Same station; algae; 18 m depth; 6 specimens (MNCNM). Off Punta del Francés, Isla de la Juventud; coralline rock from rubble and pavement zone; 1 m depth; 32 specimens. Off Cayo Matías; *Halimeda* sp.; 3 m depth; 46 specimens. Off Punta Pedernales; coarse calcareous sand; 35 m depth; 1 specimen. USA: North Carolina; Cowpen Island, Core Sound; among empty shells; 126 specimens (ZMUC). Florida, Tidal Canal, Key Largo; 3 specimens (legit Kathe Jensen) (ZMUC). Texas; off Port Aransas; 27°32'05"N, 96°28'19"W; 75 m depth; 1 specimen (as *Syllis* (*Typosyllis*) sp. D by Uebelacker, 1984).

Distribution.—Cosmopolitan.

Syllis cf. *vivipara* Krohn, 1869
Figure 1I, J

? *Syllis vivipara* Krohn, 1869:198.—Goodrich, 1900:105, pl. 13.
Syllis vivipara.—Acero and San Martín, 1986:11, figs. 4, 5.
? *Syllis* (*Typosyllis*) *vivipara.*—Fauvel, 1923:267, fig. 100e, f.

Material Examined.—Cuba: Off Cayo Matías, *Halimeda* sp.; 3 m depth; 10 specimens (2 in USNM). Off Punta del Francés, Isla de la Juventud; in a dead coral from rubble and pavement zone; 1 m depth; 1 specimen (MNCNM).

Remarks.—This species is very similar to *S. prolifera* in general appearance of the body, cirri, acicula, pharynx and proventriculus, but *S. vivipara* has the blades of the compound setae unidentate to indistinctly bidentate, with a subdistal spine. The identification is tentative; the general appearance of the body agrees quite well with Goodrich's description, compound setae are similar, somewhat hooked and unidentate. However, in the descriptions by Goodrich and Fauvel, the blades of the compound setae are shown devoid of spines. The blades of my specimens examined under low magnifications are nearly identical to those of Goodrich's description. *Syllis fasciata* Malmgren, 1867 sensu Imajima and Hartman (1964) is very similar to these specimens, and perhaps is the same species.

Distribution.—Western Mediterranean. Iberian Peninsula. Cuba.

Syllis alosae new species
Figure 2

Syllis (*Typosyllis*) cf. *lutea.*—Uebelacker, 1984:30–136, fig. 30-130a–f.
Not *Typosyllis lutea* Hartmann-Schröder, 1960.

Material Examined.—Cuba: Off Punta Pedernales, Isla de la Juventud; inside living coral; 1.5 m depth; holotype (MNCNM) and 9 paratypes (MNCNM). Same station; inside dead coral; 4 m depth; 1 specimen (MNCNM). Between Punta del Este, Isla de la Juventud, and Cayo Matías; algae; 18 m depth; 1 specimen (MNCNM). Off Punta del Francés, Isla de la Juventud; coralline rock from rubble and pavement zone; 1 m depth; 11 specimens (MNCNM). Off Cayo Matías; *Halimeda* sp.; 3 m depth; 2 specimens (MNCNM). Canal de los Vapores, Cayo Bocas de Alonso; sponges on *Rhizophora mangle* roots; 0.5 m depth; 1 specimen (MNCNM).

Description.—Body relatively long and thin, cylindrical; segments of anterior part of body each with transverse reddish-brown double circle (Fig. 2A). Holotype 6 mm long, 0.28 mm wide for 71 setigers. Prostomium rectangular, partially pigmented; 4 small eyes in open trapezoidal arrangement and sometimes 2 anterior eyespots. Lateral antennae originating on anterior margin of prostomium, with about 11 articles; median antenna originating slightly behind, with about 12

articles, longer than prostomium and palps together. Palps longer than prostomium, broad, triangular. Peristomium dorsally reduced, covered by first setiger; dorsal tentacular cirri with about 13 articles, ventral tentacular cirri with about 9. Anterior dorsal cirri somewhat longer than remaining, with about 15 articles. Larger specimens with proportionally longer dorsal cirri. Post-proventricular dorsal cirri relatively short, alternating long cirri with about 11 articles and short cirri with 8 articles. Parapodia conical. Ventral cirri digitiform, shorter than parapodial lobes. Compound setae heterogomph falcigers and short pseudospinigers, similar throughout; pseudo-spinigers numbering 1–2 on each parapodium, slender, indistinctly bidentate; distal tooth rounded, with spines short and medium coarse (Fig. 2D); remaining falcigers usually numbering 4 on each parapodium, with bidentate, distal teeth slightly hooked, with thin, moderately long spines on cutting margin (Fig. 2E). On midbody, blades of pseudospinigers about 65 μm, dorsalmost blades of falcigers 28 μm long, those of ventralmost 17 μm long. Solitary dorsal simple setae on posterior setigers, slightly serrated, with a distal notch (Fig. 2F). Solitary ventral simple seta on far posterior setigers, bidentate, with short subdistal spines (Fig. 2G). Solitary aciculae in middle and posterior setigers, thick, straight, protruding from parapodial lobe (Fig. 2H); 2–3 similar but more slender aciculae anteriorly. Pharynx long, extending about 9 segments; pharyngeal tooth small, located on anterior rim. Proventriculus about half length of pharynx, through about 4½ setigers, with about 32 rows of muscle cells. Pygidium with 2 anal cirri, with about 10 articles, and a ventral, short digitiform medial appendage.

Remarks.—*Syllis alosae* is closely related to *Syllis variegata*. The general appearance of the body, coloration and aciculae are nearly identical. However, *S. alosae* has a short, distally knobbed, superior pseudospiniger on each parapodium. This kind of seta is not common in the genus *Syllis*; only *Syllis rosea* Langerhans, 1879 has short pseudospinigers similar in shape to those of *S. alosae*. However, *S. rosea* has posterior acicula with the tip bent at a right angle, whereas *S. alosae* has thick, straight aciculae (Fig. 2H).

Distribution.—Cuba. Gulf of Mexico.

Etymology.—The species is named in honor of Dr. Carmen Alós, a Spanish polychaetologist from the Departament de Zoología, Universitat de Barcelona.

Syllis gerlachi (Hartmann-Schröder, 1960)

Typosyllis gerlachi Hartmann-Schröder, 1960:81, pls. 6, 7, figs. 42–44.—Campoy, 1982:410, pl. 45a–p.

Syllis (Typosyllis) gerlachi.—Ben-Eliahu, 1977:19, fig. 5a–j.—Uebelacker, 1984:30–145, fig. 30-142.

Material Examined.—Cuba: Canal de los Vapores, Cayo Bocas de Alonso; sponges on *Rhizophora mangle* roots; 0.5 m depth; 29 specimens. Off Cayo Matías, *Halimeda* sp.; 3 m depth; 5 specimens (MNCNM).

Distribution.—Red Sea. Cantabrician coast of Spain. Gulf of Mexico. Cuba.

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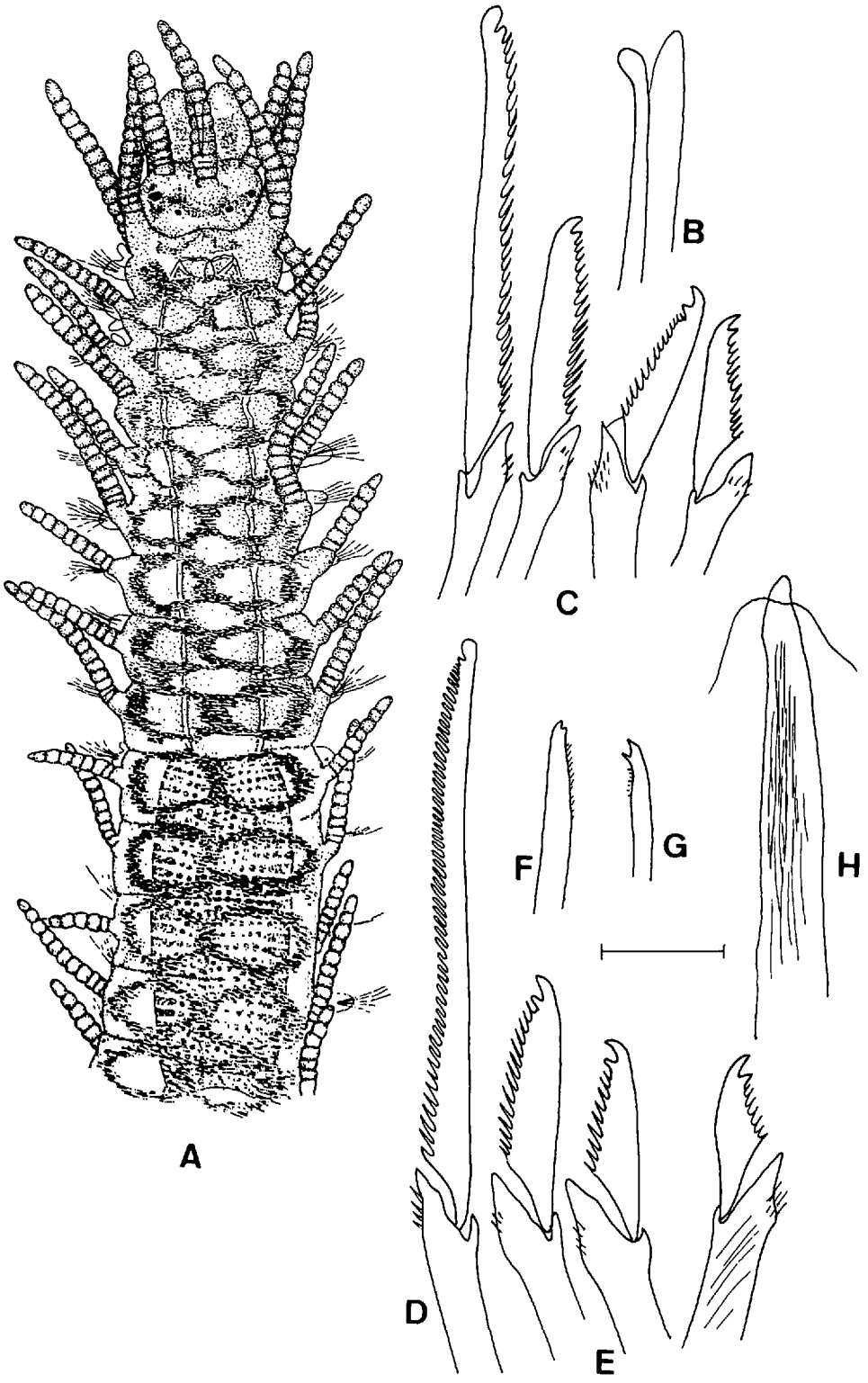
Figure 2. *Syllis alosae*. Holotype. A, Anterior end, dorsal view; B, aciculae, anterior parapodium; C, pseudospiniger and falcigers, anterior parapodium; D, pseudospiniger, medial-posterior parapodium; E, falcigers, medial-posterior parapodium; F, dorsal simple seta; G, ventral simple seta; H, acicula, posterior parapodium. Scale: A: 0.4 mm. B–H: 10 μm.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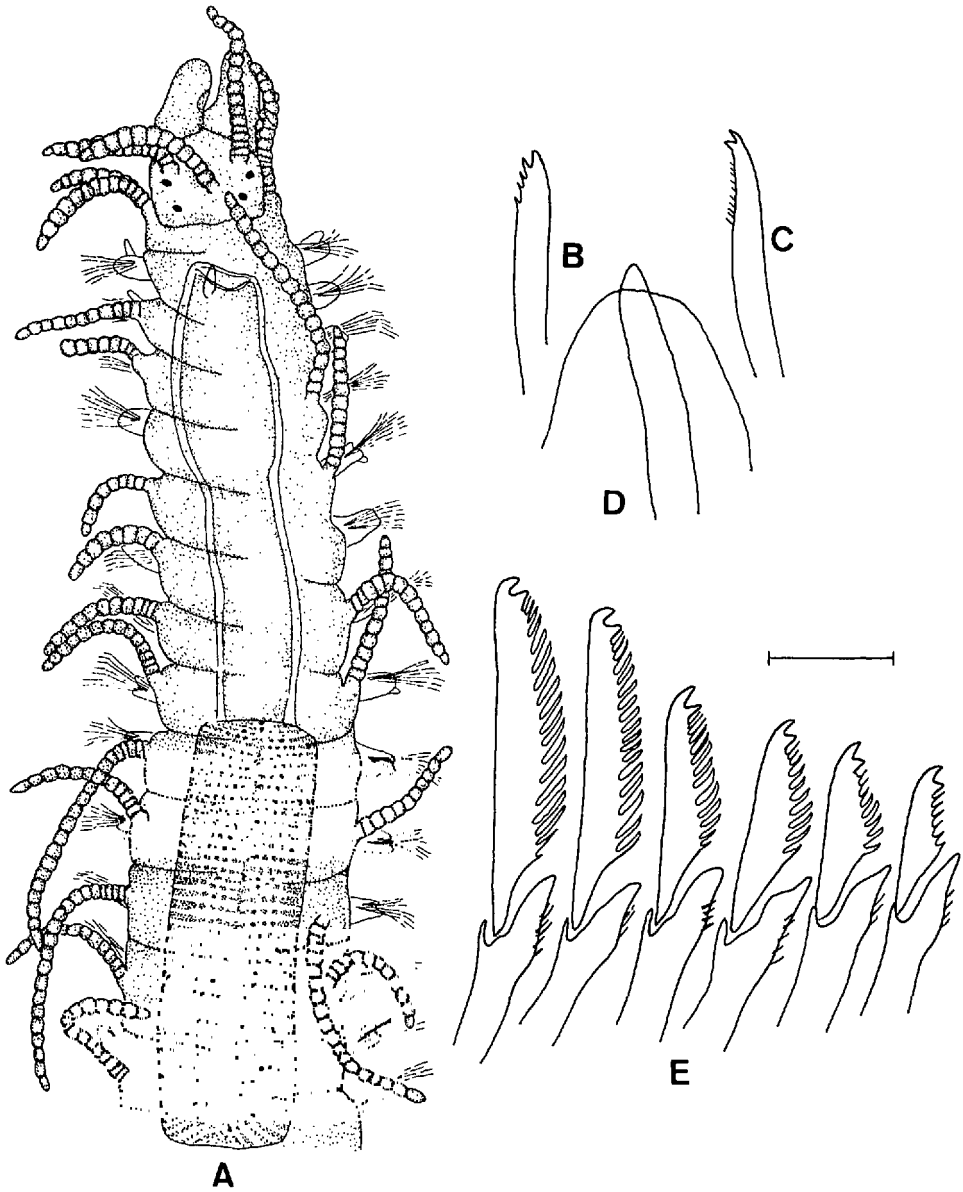


Figure 3. *Syllis sardai.* Holotype. A, Anterior end, dorsal view; B, dorsal simple seta; C, ventral simple seta; D, acicula, posterior; E, compound setae, midbody. Scale: A: 0.4 mm. B–E: 10 μm.

Syllis sardai new species
Figure 3

Material Examined.—Cuba: Between Punta del Este, Isla de la Juventud, and Cayo Matías; in dead coral; 4 m depth; holotype (MNCNM). Off Punta del Francés, Isla de la Juventud; in dead coral; 1 m depth; paratype (MNCNM).

Description.—Body long, slender, without color markings, 7.5 mm long, 0.28 mm wide for 74 setigers. Prostomium pentagonal; 4 small eyes in open trapezoidal arrangement. Palps bluntly triangular, about as long as prostomium. Median antenna originating at midlength of prostomium, with about 13 articles, similar

in length to prostomium and palps together; lateral antennae originating in front of anterior eyes, with about 16 articles, slightly longer than prostomium and palps together. Dorsal tentacular cirri short, with about 13 articles; ventral tentacular cirri with about 9 articles. Dorsal cirri relatively slender, alternating long cirri, similar in length to body width, with about 16–18 articles in midbody, and short cirri with about 10–12 articles in midbody. Parapodia conical; ventral cirri short, digitiform. Compound setae numbering 10 anteriorly, 6–7 in midbody, 5 posteriorly; all with large, strongly bidentate blades, with distal and proximal teeth similar, provided with long, coarse spines on cutting margin; shafts with subdistal spines; without antero-posterior gradation in shape, slight antero-posterior gradation in length. Dorso-ventral gradation in length, blades of uppermost setae 32 μm long, those of lowermost 15 μm long in midbody; spines on cutting margin longer and coarser as more dorsally (Fig. 3E). Solitary dorsal simple setae from midbody, slender, bifid, with short, thin, subdistal spines (Fig. 3B). Solitary ventral simple setae in far posterior setigers, bidentate, provided with short and thin subdistal spines (Fig. 3C). Solitary aciculae from midbody, moderately thick, straight, with tip protruding from parapodial lobes (Fig. 3D). Pharynx moderately long, extending through about 8 segments; pharyngeal tooth on anterior rim. Proventriculus slightly shorter than pharynx through about 5–6 segments, rectangular, with about 40 rows of muscle cells. Pygidium small, with 2 long anal cirri with 16–23 articles and a short median appendage.

Remarks.—*S. sardai* is characterized by having strongly bidentate falcigers, provided with long and coarse spines. Their shape is similar to that of *S. mediterranea* Ben-Eliahu, 1977 (Ben-Eliahu, 1977; San Martín, 1984), but the blades have smaller teeth and shorter spines in *S. mediterranea*; furthermore, *S. mediterranea* has acicula ending in right angle, truncate dorsal simple seta, thicker dorsal cirri and, sometimes, dorsal epidermal glands. The compound setae of *S. sardai* are also similar to those of *S. busseltonensis* (Hartmann-Schröder, 1983) and *S. rockinghamensis* (Hartmann-Schröder, 1983); however, setae of these two species have shorter and thinner spines on the cutting margin.

Distribution.—Cuba.

Etymology.—The species is named in honor of Dr. Rafael Sardá, a Spanish polychaetologist from the Centre d'Estudis Avançats de Blanes (Girona).

Syllis variegata Grube, 1860

Syllis variegata Grube, 1860:45.—San Martín, 1984:354, pls. 88, 89.
Syllis (Typosyllis) variegata.—Fauvel, 1923:262, fig. 97h–n.
Typosyllis variegata.—Campoy, 1982:445, pl. 65.

Material Examined.—Cuba: Off Punta Pedernales, Isla de la Juventud; in living coral; 1.5 m depth; 2 specimens.

Distribution.—Apparently cosmopolitan.

Syllis hyalina Grube, 1863
Figure 1N, O

Syllis hyalina Grube, 1863:45, pl. 4, fig. 8.—San Martín, 1984:387, pl. 101.
Syllis (Typosyllis) hyalina.—Fauvel, 1923:262, fig. 98a, b.—Day, 1973:29.
Typosyllis hyalina.—Campoy, 1982:459, pl. 66a–p.

Material Examined.—Cuba: Canal de los Vapores, Cayo Bocas de Alonso, Archipiélago de los Canarreos; in sponges on *Rhizophora mangle* roots; 0.5 m depth; 20 specimens. Off Punta Pedernales, Isla

de la Juventud; inside living coral; 1.5 m depth; 2 specimens (USNM). Off Cayo Matías; *Halimeda* sp.; 3 m depth; 4 specimens (MNCNM).

Distribution.—Apparently cosmopolitan.

Syllis corallicoloides Augener, 1922

Syllis (*Typosyllis*) *corallicoloides* Augener, 1922:42.—Uebelacker, 1982:587, fig. 3a–j.—1984:30–143, fig. 30-138.
Syllis (*Typosyllis*) *corallicoides.*—Dueñas, 1981:91, pl. 14a–c.
Syllis corallicoloides.—Núñez, 1990:420, fig. 134.

Material Examined.—Cuba: Off Punta Pedernales, Isla de la Juventud; in living coral; 1.5 m depth; 3 specimens. Between Punta del Este, Isla de la Juventud, and Cayo Matías; *Halimeda* sp. in *Thalassia testudinum* beds; 3 m depth; 1 specimen. Off Punta Pedernales; in dead coral; 4 m depth; 1 specimen (MNCNM). Between Punta del Este, Isla de la Juventud, and Cayo Matías; in dead coral; 4 m depth; 4 specimens (MNCNM). Off Punta del Francés, Isla de la Juventud; coralline rock from rubble and pavement zone; 1 m depth; 4 specimens. Off Cayo Matías; *Halimeda* sp.; 3 m depth; 7 specimens. Off Punta del Francés, Isla de la Juventud; algae; 4 m depth; 1 specimen (MNCNM).

Distribution.—West Indies. Atlantic coasts of Mexico. Gulf of Mexico. Brazil. Colombia. Cuba. Canary Islands.

Syllis alternata Moore, 1908

Syllis alternata Moore, 1908:323, fig. 1a–f.—San Martín and Viéitez, 1984:153, figs. 1, 2.
Syllis (*Typosyllis*) *alternata.*—Gardiner, 1976:141, fig. 13b, c.—Uebelacker, 1984:30–141, fig. 30-136.
Typosyllis cf. *alternata.*—Imajima, 1966:273, fig. 58a–l.

Material Examined.—Cuba: Off Cayo Matías; *Turbinaria turbinata*; 3 m depth; 1 specimen. Between Punta del Este, Isle of Pines and Cayo Matías; in dead coral; 4 m depth; 1 specimen (MNCNM). Off Punta del Francés, Isla de la Juventud; in dead coral; 1 m depth; 1 specimen. Off Punta Pedernales, Isle of Pines; on a gorgonian; 50 m depth; 1 specimen.

Distribution.—North Pacific. North Carolina. Gulf of Mexico. Cuba. Western Mediterranean.

Syllis gracilis Grube, 1840

Syllis gracilis Grube, 1840:77, pl. 31a–l.—Campoy, 1982:368.—San Martín, 1984:376, pls. 97, 98.
Syllis (*Syllis*) *gracilis.*—Fauvel, 1923:259, fig. 96f–i.—Day, 1967:241, fig. 12.1.m–p.—Ben-Eliahu, 1977:7.

Material Examined.—Cuba: Canal de los Vapores, Cayo Bocas de Alonso; in sponges on *Rhizophora mangle* roots; 0.5 m depth; 16 specimens. Off Cayo Matías; *Stypopodium zonale*; 3 m depth; 1 specimen (MNCNM). Between Punta del Este, Isla de la Juventud, and Cayo Matías; coralline rock from rubble and pavement zone; 4 m depth; 1 specimen. U.S.A., North Carolina: Cowpen Island, core sound; empty shells; 4 specimens (ZMUC). Bogue Sound; sand and shells; 1 specimen (ZMUC). Shackleford Jetty, near Beaufort; 2 specimens (ZMUC).

Distribution.—Cosmopolitan.

Syllis barbata new species
Figure 4

Material Examined.—Cuba: Off Punta Pedernales, Isle of Pines; coarse calcareous sand; 50 m depth; holotype (MNCNM) and 2 paratypes (MNCNM).

Description.—Body long, slender, 7 mm long, nearly 0.2 mm wide for 68 setigers. Body yellowish, peristomium and first setiger dorsally with red pigment; setigers 2 and 3 without pigment, anterior setigers thereafter each with a thin, transverse red band (Fig. 4). Prostomium oval to circular, somewhat wider than long, pro-

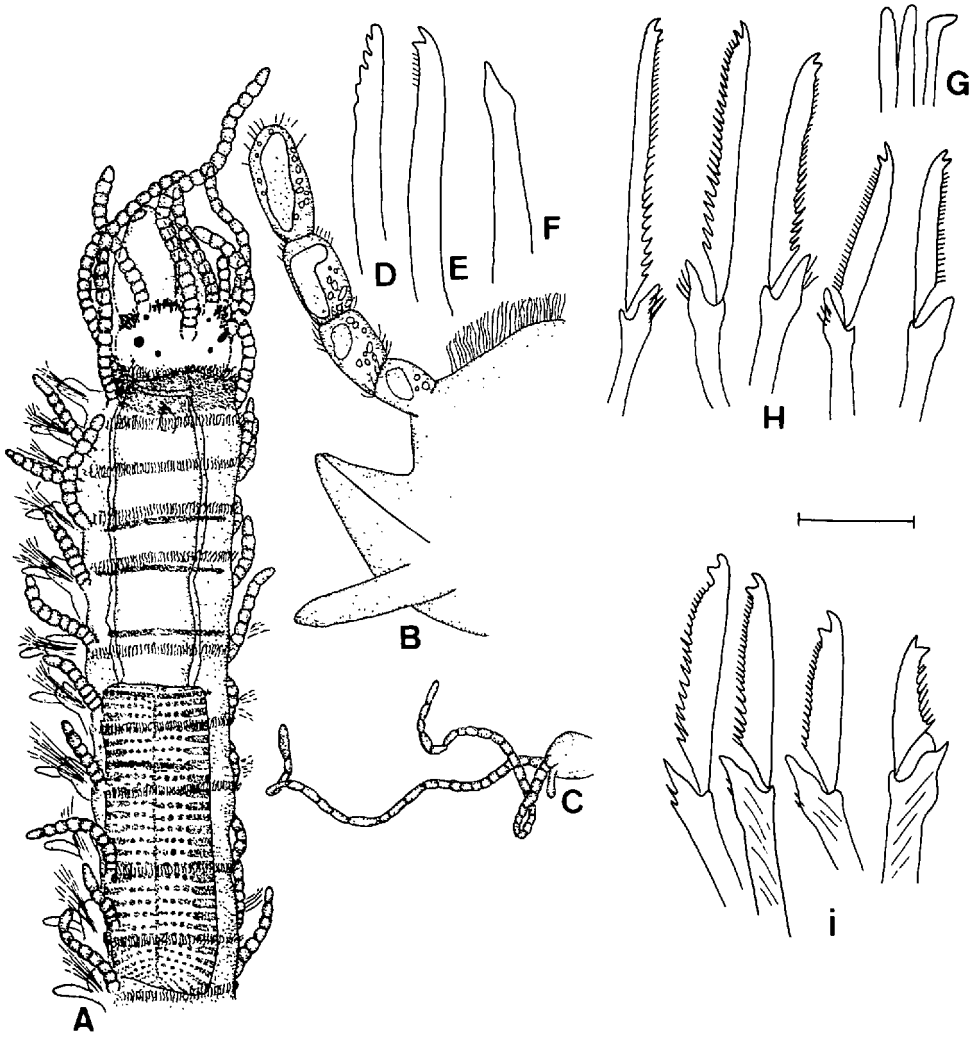


Figure 4. *Syllis barbata*. Holotype. A, anterior end, dorsal view, holotype; B, medial-posterior parapodium; C, pygidium and anal cirri; D, dorsal simple seta; E, ventral simple seta; F, acicula, posterior; G, aciculae, anterior parapodium; H, compound setae, anterior; I, compound setae, medial-posterior. Scale: A, C: 0.4 mm. B: 16 μm. D–I: 10 μm.

vided with long and dense cilia on anterior and posterior margins; 4 small eyes in open trapezoidal arrangement and 2 anterior eyespots just behind lateral antennae. Median antenna longer than prostomium and palps together, with about 25 articles, originating between anterior eyes; lateral antennae originating near anterior eyespots, approximately half as long as median antenna, with about 13 articles. Palps longer than prostomium, stout, oval. Peristomium covering posterior margin of prostomium, anteriorly ciliated. Dorsal tentacular cirri with about 15 articles, ventral ones with about 9 articles. Dorsal cirri of first setiger proportionally long, with about 21 articles. Dorsal cirri of remaining setigers very short; those of anterior setigers with about 5–7 articles, maximally with 9–10 articles; number of articles progressively decreasing to only 4 long, rectangular articles on each dorsal cirrus of midbody and posterior part of body (Fig. 4B), articles of

cirri provided each with few, thin, short cilia and some granular inclusions and one longer hyaline inclusion. Each segment provided with a dorsal ciliary band of long cilia (Fig. 4B). Parapodia conical (Fig. 4B). Ventral cirri digitiform, as long as parapodial lobes (Fig. 4B). Anterior parapodia each with about 12 compound setae; shafts slender, provided with 3–4 thin and long subdistal spines; blades long, slender, bidentate, provided with thin, short spines on cutting margin; slight dorso-ventral gradation in length, blades of uppermost setae 30 μm long, those of lowermost 20 μm long (Fig. 4H). Marked antero-posterior gradation in length and shape of blades, becoming progressively shorter, wider, more strongly bidentate (Fig. 4I); midbody parapodia each with about 7 compound setae, uppermost blades 25 μm long, lowermost ones 17 μm long, with proximal tooth that becomes larger ventrally and posteriorly. Solitary dorsal simple setae from midbody, unidentate, with coarse subdistal serrations (Fig. 4D). Solitary ventral simple setae on posterior setigers, strongly bidentate, with short and thin spines subdistally (Fig. 4E). Anterior parapodia each with 3 aciculae, 2 straight, one bent at a right angle at the tip (Fig. 4G); number of aciculae decreasing to only one posteriorly, thicker, with acute tip and thickened subdistally (Fig. 4F). Pharynx through about 6 setigers, proventriculus through about 4 setigers, with about 34 rows of muscle cells; pharyngeal middorsal tooth located anteriorly, slightly behind anterior rim. Pygidium with 2 very long, articulated anal cirri and short, digitiform median appendage (Fig. 4C).

Remarks.—*Syllis barbata* n. sp. is a very peculiar species. It is characterized by having very short dorsal cirri, long palps and, especially, by the dorsal ciliated bands and ciliated prostomium. The general appearance of the body and color pattern are similar to *Syllis torquata* Marion & Bobretzky, 1875, a poorly known Mediterranean species; the aciculae and anterior compound setae are also similar, but *S. torquata* has compound setae of midbody and posterior part of body that are very different (see Péres, 1954; Cognetti, 1965; Martin and San Martín, 1988). *S. schulzi* (Hartmann-Schröder, 1960) also has similar aspects of the body and coloration, but the compound setae of the posterior setigers have shorter, hooked blades.

Distribution.—Cuba.

Etymology.—The specific name *barbata,* bearded, refers to the appearance of the prostomium.

Syllis garciai (Campoy, 1982)
Figure 5A–D

Langerhansia garciai Campoy, 1982:386, pls. 36–38.
Syllis garciai.—San Martín, 1984:364, pl. 92.

Material Examined.—Cuba: Off Punta Pedernales, Isla de la Juventud; coarse calcareous sand; 35 m depth; 2 specimens (USNM). Between Punta del Este, Isla de la Juventud, and Cayo Matías, Archipiélago de los Canarreos; coarse calcareous sand; 18 m depth; 4 specimens. Off Cayo Matías; coarse calcareous sand; 6 m depth; 1 specimen. Canal de los Vapores; Cayo Bocas de Alonso; in sponges on *Rhizophora mangle* roots; 0.5 m depth; 2 specimens (MNCNM). Between Punta del Este, Isla de la Juventud, and Cayo Matías, Archipiélago de los Canarreos; *Halimeda* sp. in *Thalassia testudinum* beds; 1 specimen. Canal de los Vapores; hydroids on *Rhizophora mangle* roots; 0.5 m depth; 1 specimen. Off Cayo Matías; *Halimeda* sp.; 3 m depth; 1 specimen. Off Punta Pedernales; Isla de la Juventud; coarse calcareous sand; 50 m depth; 1 specimen. U.S.A.: North Carolina, Bogue Sound; sand and shells; 2–4 m depth; 2 specimens (ZMUC).

Distribution.—Atlantic and Mediterranean Spanish coasts. Cuba. North Carolina.

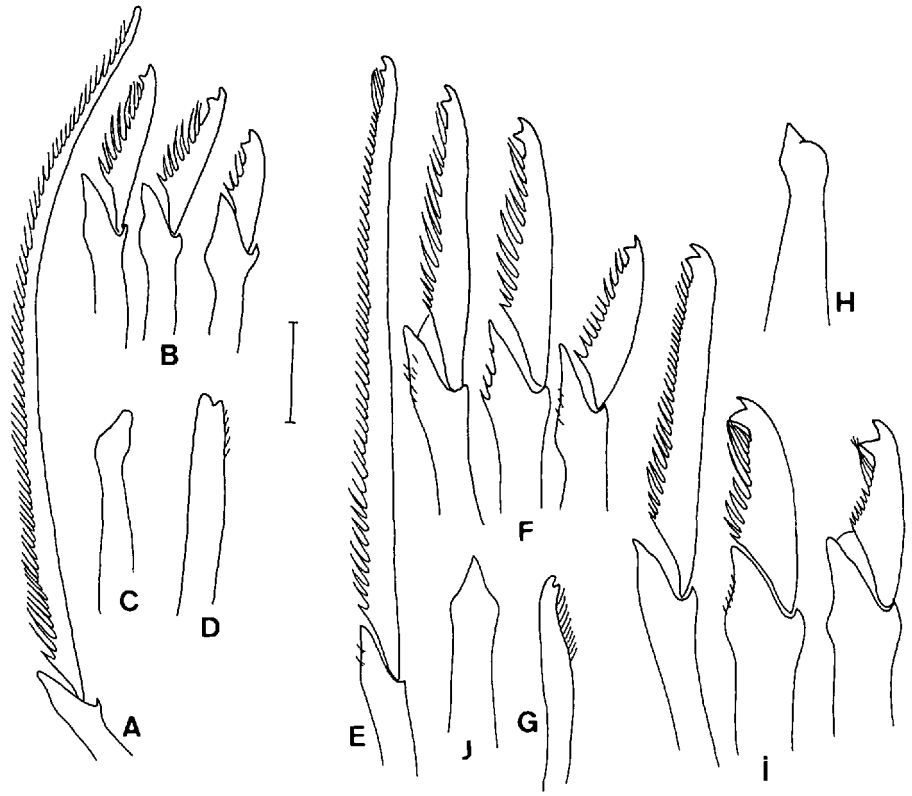


Figure 5. *Syllis garciai.* A, pseudospiniger, midbody; B, falcigers, midbody; C, acicula, posterior; D, dorsal simple seta. *Syllis broomensis.* E, pseudospiniger, midbody; F, falcigers, midbody; G, dorsal simple seta; H, acicula, posterior. *Syllis lutea.* I, compound setae, midbody; J, acicula, posterior. Scale: 10 μm.

Syllis broomensis (Hartmann-Schröder, 1979) new combination
Figure 5E–H

Typosyllis (*Langerhansia*) *broomensis* Hartmann-Schröder, 1979:88, fig. 50-56.—1980:391.

Material Examined.—Cuba: Between Punta del Este, Isle of Pines and Cayo Matías, Archipiélago de los Canarreos; *Halimeda* sp. in *Thalassia testudinum* beds; 3 m depth; 1 specimen.

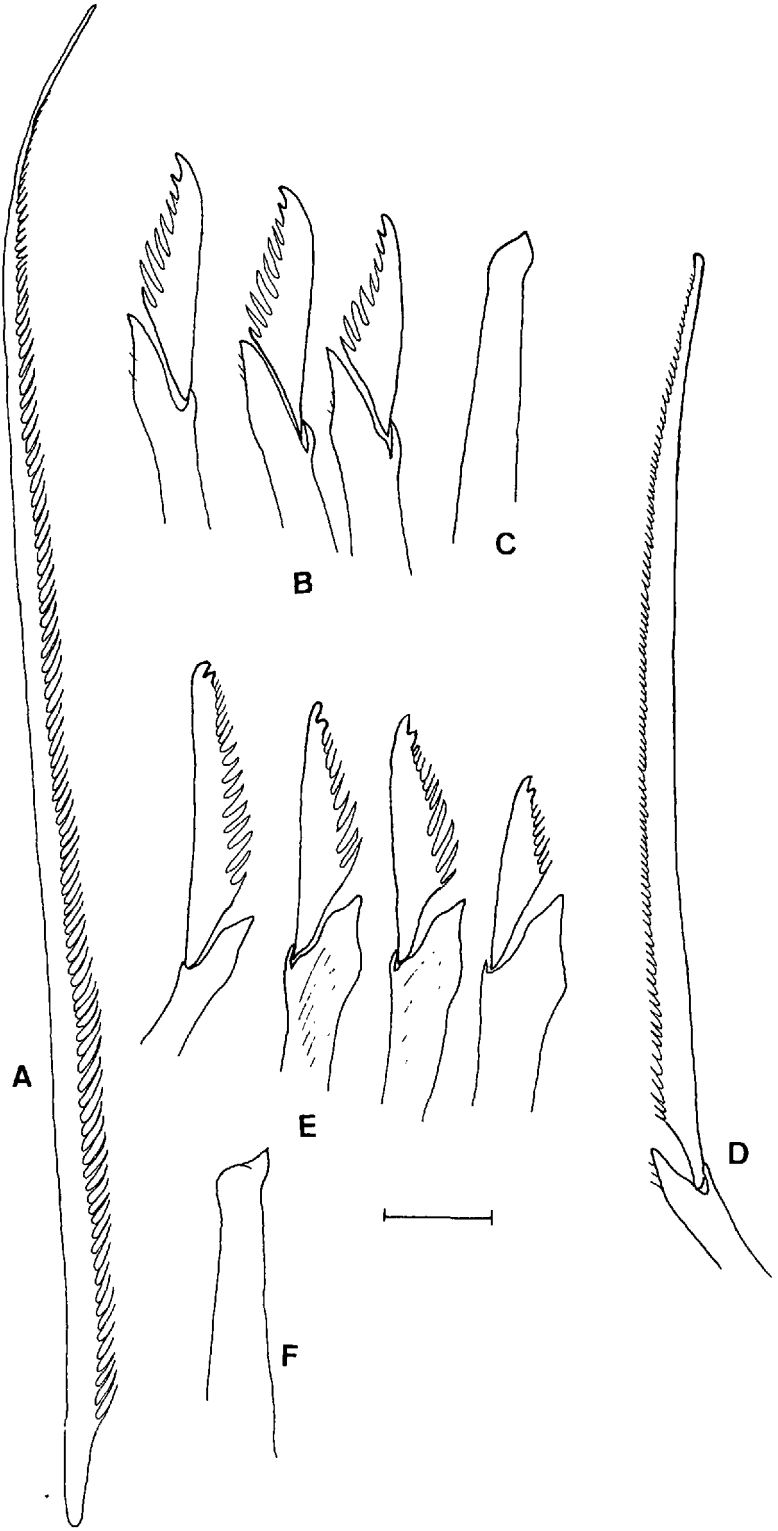
Distribution.—Australia. West Indies. Cuba.

Syllis cf. *cornuta* Rathke, 1843
Figure 6A–C

? *Syllis cornuta* Rathke, 1843:164, pl. 2: fig. 12.—Pettibone, 1963:118, fig. 31i, j.
? *Syllis* (*Ehlersia*) *cornuta.*—Fauvel, 1923:267, fig. 100g–i.—Uebelacker, 1984:30–120, fig. 30-113.
? *Syllis* (*Langerhansia*) *cornuta.*—Day, 1967:244, fig. 12.2s–u.—1973:29.—Gardiner, 1975:140, fig. 12o–s.
? *Typosyllis* (*Langerhansia*) *cornuta.*—Hartmann-Schröder, 1971:147.
? *Langerhansia cornuta.*—Imajima, 1966:256, fig. 51a–o.—Ben-Eliahu, 1977:13, fig. 3a, b.—Campoy, 1982:378, pls. 34, 35.
? *Ehlersia cornuta.*—Hartman, 1945:15.

Material Examined.—Florida: Fort Pierce; sand in washings from *Chaetopterus* tubes; 10 specimens (ZMUC).

Distribution.—Cosmopolitan.


A
B
C
D
E
F

Remarks.—These specimens agree quite well with the above-mentioned descriptions of *S. cornuta*; however, the compound setae are slightly different: the blades of the falcigers have smaller proximal teeth and longer and coarser spines on the cutting margin; the blades of spinigers are proportionally longer and unidentate, with long, thin spines on the cutting margin. These compound setae are identical to those described by Campoy (1982) to *Langerhansia* cf. *caeca* Katzman, 1973. However, the present specimens have four eyes, whereas *L. caeca* lacks eyes. A revision of *S. cornuta* and similar species is needed.

Syllis beneliahui (Campoy and Alquézar, 1982)
Figure 1K–M

Langerhansia beneliahui Campoy and Alquézar, 1982:124, fig. 3a, b.—Campoy, 1982:389, pls. 39, 40.
Syllis beneliahuae.—San Martín, 1984:360, pls. 90, 91.

Material Examined.—Cuba: Between Punta del Este, Isle of Pines, and Cayo Matías, Archipiélago de los Canarreos; in dead coral; 4 m depth; 2 specimens (MNCNM). Canal de los Vapores, Cayo Bocas de Alonso, Archipiélago de los Canarreos; sponges on *Rhizophora mangle* roots; 0.5 m depth; 13 specimens.

Remarks.—This species is similar to *Langerhansia rosea magna* Westheide, 1974, from the Galapagos Islands. One specimen of that species has been examined, kindly loaned by Dr. W. Westheide; it differs from my specimens especially in the shape of pseudospinigers.

Distribution.—Spanish Mediterranean. Cuba.

Syllis mexicana (Rioja, 1960) new combination
Figure 6D–F

Ehlersia mexicana Rioja, 1960:291, figs. 4–11.—Rullier, 1974:22.
Langerhansia mexicana.—Fauchald, 1977b:20.

Material Examined.—Cuba: Between Punta del Este, Isla de la Juventud, and Cayo Matías, Archipiélago de los Canarreos; in dead coral; 4 m depth; 1 specimen. Punta del Francés, Isla de la Juventud; in dead coral; 1 m depth; 1 specimen (MNCNM).

Distribution.—Eastern Mexico. Cuba. Panama.

Syllis ortizi new species
Figure 7

Syllis (*Typosyllis*) sp. A. Uebelacker, 1984:30–134; fig. 30-126a–g.

Material Examined.—Cuba: Off Punta Pedernales, Isla de la Juventud; coarse calcareous sand; 50 m depth; holotype (MNCNM) and paratype (MNCNM). Between Punta del Este, Isla de la Juventud, and Cayo Matías, Archipiélago de los Canarreos; calcareous sand; 18 m depth; 1 specimen (regenerating fragment) (MNCNM). U.S.A: Florida, 26°45′49″N, 83°32′7″W; medium sand; 2 paratypes (USNM). Florida, 26°45′50″N, 82°45′11″W; medium sand; 24 m depth; 4 paratypes (USNM). Florida, off Panama City, 29°54′59″N, 86°4′59″W; coarse sand; 37 m depth; 1 paratype (USNM).

Description.—Body slender, without color markings, 5 mm long, 0.25 mm wide for 59 setigers. Prostomium rounded to pentagonal, with 4 small eyes in open

←

Figure 6. *Syllis* cf. *cornuta.* A, blade of pseudospiniger, midbody; B, falcigers, midbody; C, acicula, posterior. *Syllis mexicana.* D, pseudospiniger, midbody; E, falcigers, midbody; F, acicula, posterior. Scale: 10 μm.

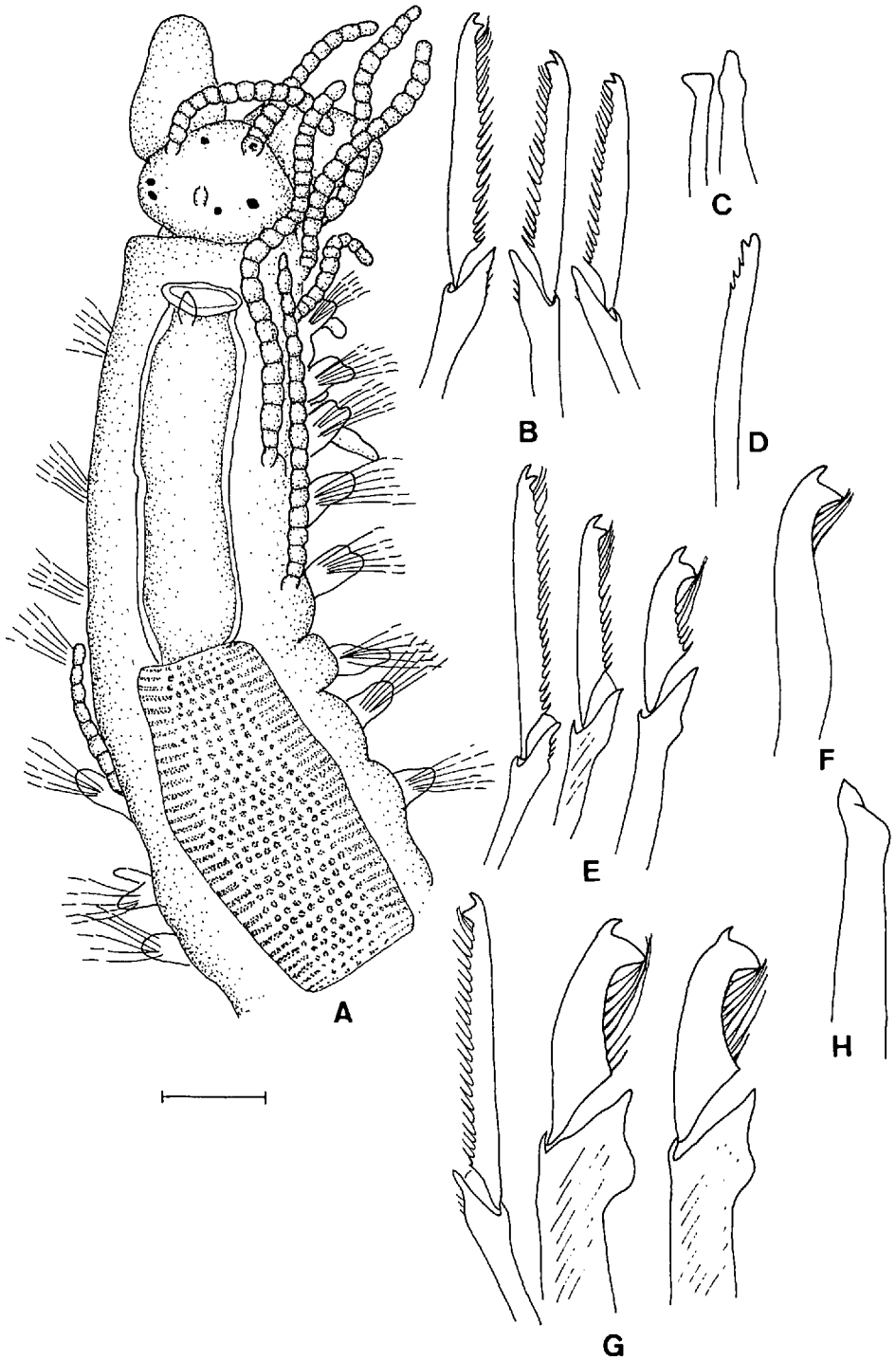


Figure 7. *Syllis ortizi.* Holotype. A, anterior end, dorsal view; B, compound setae, anterior; C, aciculae, anterior; D, dorsal simple seta; E, compound setae, midbody; F, ventral simple seta; G, compound setae, posterior; H, acicula, posterior. Scale: A: 0.64 mm. B–H: 10 μm.

trapezoidal arrangement and 2 conspicuous eyespots anterior to bases of lateral antennae. Median antenna lacking in holotype, with 16–29 articles in other specimens; lateral antennae with about 13 articles. Dorsal tentacular cirri with about 18 articles, ventral tentacular cirri with about 13 articles. Dorsal cirri slender, alternating long and short; long dorsal cirri of midbody with about 18 articles, slightly longer than body width; short dorsal cirri of midbody with about 5–6 articles; articles of dorsal cirri rectangular, longer than wide, with golden-yellow inclusions. Ventral cirri digitiform, anteriorly longer than parapodial lobes (Fig. 7A) decreasing in length posteriorly. Blades of compound setae each with small, hooked distal tooth and thicker, triangular, acute proximal tooth. Marked anteroposterior gradation both in length and shape; anterior parapodia each with about 9 compound setae, with long, slender blades, provided with thin, relatively short spines on cutting margin, except distally, directed upwards, blades of uppermost setae 38 μm long, those of lowermost 25 μm long (Fig. 7B, E, G). Compound setae progressively with thicker shafts and wider blades, especially ventrally, with longer and more hooked proximal tooth and longer spines on cutting margin. Posterior setigers each with 1–2 compound setae similar to anterior setae, about 30 μm long; and 2–3 compound setae with strongly enlarged shafts, and massive, long, strongly hooked blades, with small distal tooth and very large and long proximal tooth, about 25 μm long, with few, long spines on cutting margin directed upwards. Solitary dorsal simple setae on posterior setigers, thin, bifid, with short spines distally (Fig. 7D). Solitary ventral simple setae in far posterior setigers, thick, similar to blades of massive compound setae, and provided with long, thin, spines distally (Fig. 7F). Solitary aciculae in middle and posterior setigers acuminate (Fig. 7H); 2–3 aciculae anteriorly, one acuminate and 1–2 rounded (Fig. 7C). Pharynx through about 6 segments; pharyngeal middorsal tooth located on anterior rim; proventriculus slightly shorter than pharynx, through about 4 segments, with about 30 rows of muscle cells (Fig. 7A).

Remarks.—As indicated by Uebelacker (1984), this species is unique based on its ventral compound setae, with massive, strongly hooked blades. Similar blades are present in *Dentatisyllis carolinae* (Day, 1973), *Syllis lutea* (Hartmann-Schröder, 1960), *S. glarearia* (Westheide, 1974) and *S. cruzi* Núñez and San Martín, 1991. However, the compound setae of all these species are much less massive, with less marked difference in size between proximal and distal teeth of blades.

Distribution.—Cuba. Gulf of Mexico.

Etymology.—The species is named in honor of Dr. Manuel Ortiz Touzet, Centro de Investigaciones Marinas of the University of La Havana, eminent carcinologist, and chief of the Cubano-Española Expedition.

Syllis corallicola Verrill, 1900
Figure 1A–D

Syllis (*Typosyllis*) *corallicola* Verrill, 1900:603.
Syllis (*Typosyllis*) *corallicola* var. *lineolata* Verrill, 1900:604.
Syllis (*Typosyllis*) *corallicola.*—Rullier, 1974:26.
Syllis (*Typosyllis*) *catenula* Verrill, 1900:604.
(?) *Syllis jugularis* Verrill, 1900:606.
Trypanosyllis fertilis Verrill, 1900:616.
Typosyllis corallicola.—Hartman, 1942, figs. 68–75.—(?) Jones, 1962:180, figs. 28–40.
Syllis (*Typosyllis*) *prolifera* (in part).—Uebelacker, 1984:30–150, fig. 30-146a–g, Not Krohn, 1852.
Syllis columbretensis.—San Martín, 1984:399, pls. 106, 107, Not Campoy, 1982.

Material Examined.—Bermuda: Syntype of *Syllis* (*Typosyllis*) *corallicola* (YPM 2979). Holotype of

Syllis jugularis, (YPM 2975). Seven syntypes of *Syllis (Typosyllis) catenula,* (YPM 41262). Cuba: Canal de los Vapores, Cayo Bocas del Alonso, Archipiélago de los Canarreos, in sponges on *Rhizophora mangle* roots; 0.5 m depth; 40 specimens (4 in USNM). Off Punta del Francés, Isla de la Juventud; in coralline rock from rubble and pavement zone; 1 m depth; 10 specimens. Off Cayo Matías, Archipiélago de los Canarreos; *Halimeda* sp.; 3 m depth; 11 specimens. Same station; *Stypopodium zonale*; 3 m depth; 1 specimen. Between Punta del Este and Cayo Matías; *Halimeda* sp. in *Thalassia testudinum* beds; 3 m depth; 2 specimens. Off Punta del Francés, Isla de la Juventud; algae; 4 m depth; 1 specimen. Canal de los Vapores, Cayo Bocas de Alonso; hydroids on *Rhizophora mangle* roots; 0.5 m depth; 2 specimens. Between Punta del Este, Isla de la Juventud, and Cayo Matías, Archipiélago de los Canarreos; in dead coral; 4 m depth; 1 specimen (MNCNM). Off Punta Pedernales, Isla de la Juventud; in living coral; 1.5 m depth; 3 specimens (MNCNM). U.S.A.: Gulf of Mexico; off Port Aransas; 27°32'05"N, 96°28'19"W; 75 m depth; 1 specimen (USNM). 29°24'1"N, 85°42'02"W; 42 m depth; 2 specimens (USNM). 29°54'58.6"N, 86°04'58.5"W; coarse sand; 37 m depth; 2 specimens (USNM).

Remarks.—Cuban specimens agree with the description and drawings of Jones (1962), but they lack the posterior cleft on the prostomium and the median antenna originates between the posterior pair of eyes rather than anteriorly to them. Anterior segments have 1–2 red dorsal transverse stripes, but the posterior ones have the typical "*variegata*" coloration, with one double circle on each segment. They have, as Verrill's specimens, dark inclusions in each article of the dorsal cirri. Hartman (1942) included *S. jugularis* as a synonym of *S. corallicola*; the former has the blades of the compound setae provided with a small proximal tooth while the latter has them with a large proximal tooth. They could be two different species, but the examined specimen of *S. jugularis* is in very poor condition.

These specimens also agree with San Martín's description (1984) of *Syllis columbretensis* from the Mediterranean.

Distribution.—Bermuda. Antilles. Cuba. Mediterranean.

Syllis lutea (Hartmann-Schröder, 1960)
Figure 5J, K

Typosyllis lutea Hartmann-Schröder, 1960:81, figs. 38–41.—Campoy, 1982:428, pl. 52a–r.
Syllis lutea.—San Martín, 1984:370, pls. 94, 95.
Syllis (Typosyllis) lutea.—Ben-Eliahu, 1977:40.

Material Examined.—Cuba: Canal de los Vapores, Cayo Bocas de Alonso, Archipiélago de los Canarreos; in sponges on *Rhizophora mangle* roots; 0.5 m depth; 1 specimen (MNCNM). Between Punta del Este, Isla de la Juventud, and Cayo Matías, Archipiélago de los Canarreos; *Halimeda* sp. in *Thalassia testudinum* beds; 3 m depth; 1 specimen. Same station; in dead coral; 4 m depth; 1 specimen (USNM). Off Punta Pedernales, Isla de la Juventud; in living coral; 1.5 m depth; 1 specimen (USNM).

Distribution.—Circumtropical.

Syllis danieli new species
Figure 8

Material Examined.—Cuba: Between Punta del Este, Isla de la Juventud, and Cayo Matías, Archipiélago de los Canarreos, inside dead coral; 4 m depth; holotype (MNCNM) and 8 paratypes (MNCNM). Off Punta Pedernales, Isla de la Juventud; in dead coral; 4 m depth; 1 paratype (MNCNM).

Description.—Body long, slender, cylindrical, filiform, 12 mm long, 0.32 mm wide for 100 setigers (incomplete specimen). Body yellowish to brown. Prostomium pentagonal to oval, wider than long; 4 small eyes in open trapezoidal arrangement; median antenna originating between anterior pair of eyes, with about 17–19 articles; lateral antennae originating in front of anterior pair of eyes, slightly posterior to anterior margin of prostomium, with about 13 articles. Dorsal tentacular cirri similar in length to antennae, with about 18–20 articles; ventral

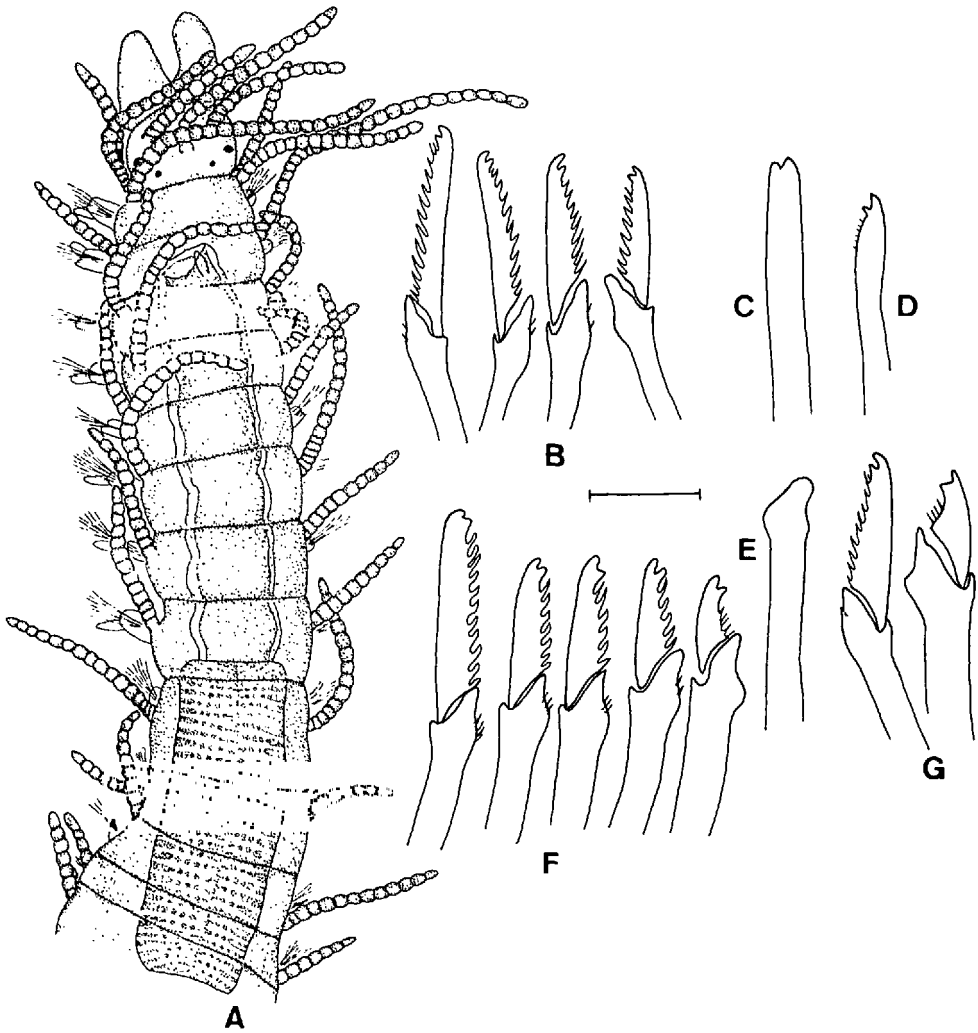


Figure 8. *Syllis danieli.* Holotype. A, anterior end, dorsal view; B, compound setae, anterior; C, dorsal simple seta; D, ventral simple seta; E, acicula, posterior; F, compound setae, midbody; G, compound setae, posterior. Scale: A: 0.4 mm. B–G: 10 μm.

tentacular cirri somewhat shorter. Dorsal cirri fusiform, slender, alternating long cirri, with about 12–14 articles in midbody, and short cirri, with about 10 articles, both longer anteriorly. Small green inclusions in articles. Ventral cirri relatively long, digitiform, anteriorly longer than parapodial lobes. Compound setae heterogomph falcigers, with marked antero-posterior gradation. Anterior parapodia each with about 10–12 compound setae, with thin, bidentate blades, provided with coarse spines on cutting margin, blades of uppermost setae 25 μm long, those of lowermost 12 μm long, with proximal tooth somewhat shorter than distal tooth (Fig. 8B). Middle and posterior parapodia each with about 6 setae; marked gradation both in shape and length; dorsalmost setae with blades provided with coarse spines on cutting margin, proximal and distal teeth very close each to other, blades about 25 μm long; more ventrally setae shafts become thicker, subdistally enlarged, and blades shorter, with proximal teeth shorter and thicker than those

of dorsalmost setae, provided with thinner spines on cutting margin, blades about 14 μm in length (Fig. 8F, G). Solitary dorsal simple setae in far posterior setigers, as thick as shafts of compound setae, bifid, with two unequal teeth (Fig. 8C). Solitary ventral simple setae in far posterior setigers of some specimens, bidentate, with short and thin spines subdistally (Fig. 8D). Anterior parapodia with 2–3 aciculae; median and posterior parapodia with solitary, thick, subdistally enlarged aciculae (Fig. 8E). Pharynx long, through about 7 segments; pharyngeal tooth located on anterior rim. Proventriculus somewhat shorter than pharynx, through about 4 segments, with 28–32 rows of muscle cells.

Remarks.—*Syllis danieli* is characterized by having the blades of the compound setae with coarse spines on the cutting margin, with blades of the dorsalmost setae with distal teeth very close and those of ventral compound setae of midbody and posterior parapodia with thick, subdistally enlarged shafts, and short, triangular blades, with the proximal tooth slightly longer and thicker than the distal tooth.

Blades of compound setae with rounded, very close teeth are also present in *Syllis corallicoloides* Augener, 1922 and *S. ferrani* Alós & San Martín, 1987. However, *S. danieli* differs from *S. corallicoloides* in having shorter dorsal cirri with fewer articles, in different shaped dorsal simple setae, and in details of the setae and in a different kind of solitary, posterior acicula. *S. danieli* differs from *S. ferrani* in the color pattern, shape of dorsal cirri, and especially because *S. ferrani* has several simple setae caused through loss of blades and enlargement of shafts.

Compound and dorsal simple setae of *S. danieli* are similar to those of *Typosyllis* (*Langerhansia*) *yallingupensis* Hartmann-Schröder, 1982 from Australia, but this species has pseudospinigers, lacking in *S. danieli* n. sp.

Distribution.—Cuba.

Etymology.—The species is named in honor of Dr. Daniel Martín Sintes, a Spanish polychaetologist, Centre d'Estudis Avançats de Blanes (Girona).

Syllis maryae new species
Figure 9

? *Ehlersia cornuta.*—Hartman, 1945:15.

Material Examined.—U.S.A.: North Carolina: Bogue Sound; shells; holotype and 11 paratypes (ZMUC). Cowpen Island, Core Sound; empty shells; 4 paratypes (ZMUC). Bird Shoal, near Carrot Island, Beaufort; 8 paratypes (ZMUC), 4 paratypes (USNM).

Description.—Body proportionally short and thick, robust, without color markings, more than 4 mm long, 0.3 mm wide for 66 setigers. Prostomium oval; 4 small eyes in trapezoidal arrangement. Median antenna originating at midlength of prostomium, longer than prostomium and palps together, with about 17 articles; lateral antennae originating in front of anterior pair of eyes, with about 13 articles. Palps stout, triangular, similar in length to prostomium. Dorsal tentacular cirri long, with about 29 articles; ventral tentacular cirri approximately half as long as dorsal ones. Dorsal cirri slender, alternating long and short, especially on midbody; long dorsal cirri approximately as long as body width, with about 25 articles; other dorsal cirri shorter than body width, with about 15 articles. Dorsal cirri with hyaline inclusions. Parapodia conical. Ventral cirri digitiform, shorter than parapodial lobes. Compound setae including 1–2 pseudospinigers and about 6 falcigers on each parapodium. Anterior parapodium each with 1–2 short pseudospinigers, distinctly bidentate with similar teeth, with short spines on cutting

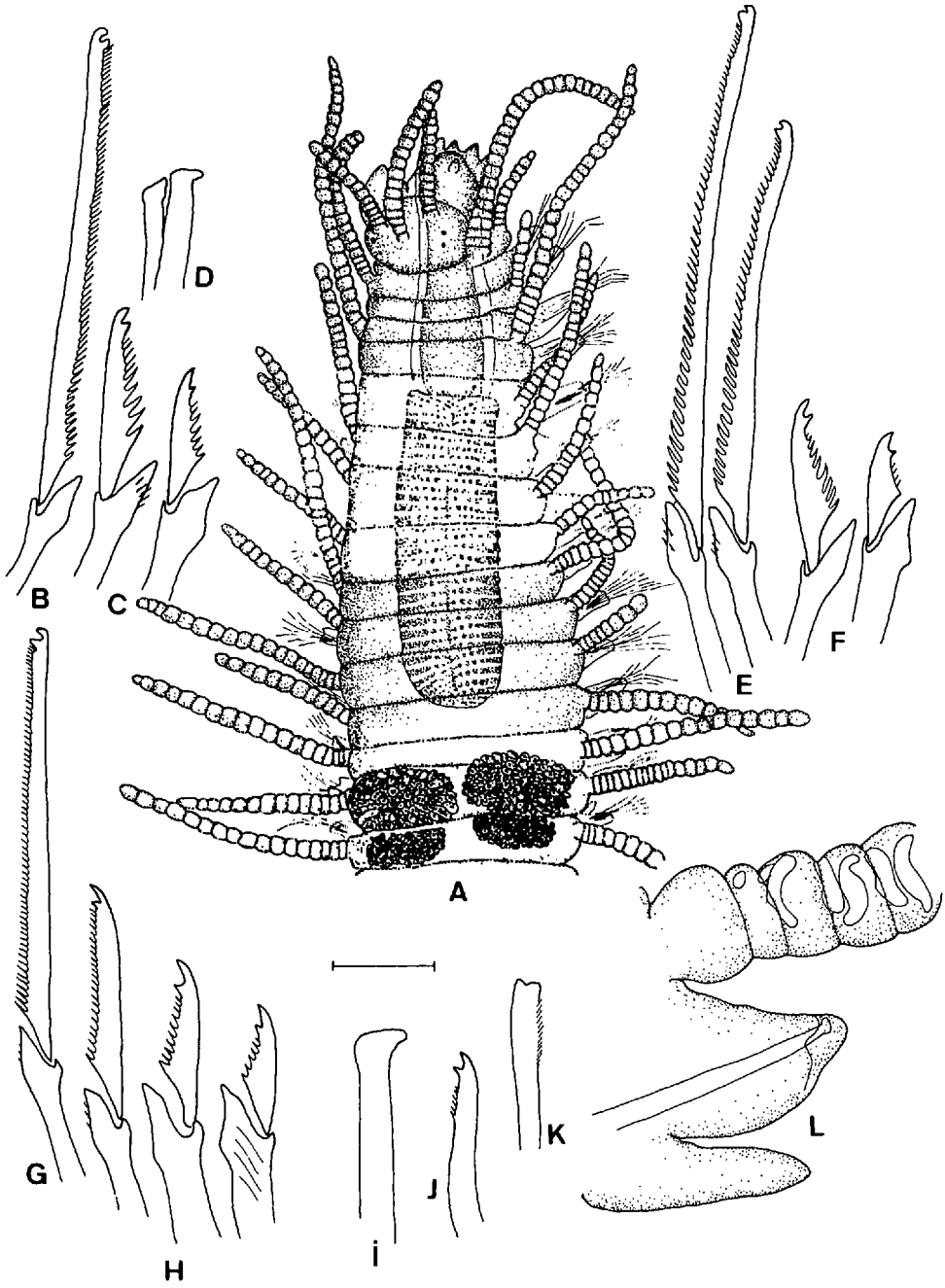


Figure 9. *Syllis maryae.* Holotype. A, anterior end, dorsal view; B, pseudospiniger, anterior; C, falcigers, anterior; D, aciculae, anterior; E, pseudospinigers, midbody; F, falcigers, midbody; G, pseudospiniger, posterior; H, falcigers, posterior; I, acicula, posterior; J, ventral simple seta; K, dorsal simple seta; L, parapodium posterior. Scale: A: 0.5 mm. B–K: 10 μm. L: 25 μm.

margin, blades about 55 μm long (Fig. 9B); falcigers bidentate, with proximal tooth shorter than distal one, and with short spines on cutting margin; slight dorso-ventral gradation in length of blades, blades of uppermost setae 25 μm long, those of lowermost 18 μm long (Fig. 9C). Setae similar throughout, but blades proportionally longer posteriorly, except in far posterior setigers, where they are similar to anterior setae (Fig. 9E–H). From midbody setigers, parapodia each with 2 unequal pseudospinigers, about 70 μm and 55 μm, respectively, with rounded distal tooth and larger proximal tooth, blades of uppermost falcigers about 28 μm long, blades of lowermost 19 μm long (Fig. 9E, F). Solitary dorsal simple setae from midbody truncate, distally bifid, with short subdistal spines (Fig. 9K). Solitary ventral simple setae in far posterior setigers, bidentate, with proximal tooth shorter than distal one, and with short subdistal spines (Fig. 9I). Anterior parapodia each with 2–3 aciculae (Fig. 9D); solitary acicula in each midbody and posterior parapodium, distally truncate, forming right angle (Fig. 9I). Pharynx proportionally short, through about 5–6 segments; pharyngeal tooth located on anterior rim, surrounded by 10 large, soft lobes. Proventriculus rectangular, similar in length and width to pharynx, through about 6–7 segments, with about 32 rows of muscle cells. Posterior to proventriculus, 2–3 segments each with pair of conspicuous, brown-yellowish glands, forming group of globular raised welts; glands decreasing in size posteriorly. Holotype is a mature female forming a sexual stolon of 16 setigers from setiger 50, with numerous ovocytes, but with head of stolon and natatory setae not formed. Two paratypes mature males, with immature stolons.

Remarks.—This is the only species of the genus provided with dorsal glands and compound setae including pseudospinigers. The general appearance of the body, short and thick, with dorsal glands, dorsal cirri with hyaline inclusions, pharynx and proventriculus similar in length, is nearly identical to that of *S. mediterranea* Ben-Eliahu (Ben-Eliahu, 1977; San Martín, 1984), *S. amica* Quatrefages (Fauvel, 1923; San Martín, 1984); and *S. alternata kabilica* Ben-Eliahu, 1977 (in my opinion a different species than *S. alternata* Moore, 1908). These three species and *S. maryae* all have the same kind of truncate dorsal simple setae, and solitary posterior aciculae, distally forming a right angle. All these characters show a close relationship. However, *S. mediterranea* and *S. kabilica* have only compound falcigers; *S. amica* also has falcigers and simple setae formed by loss of blades and enlargement of the shafts. *S. maryae* was questionably identified as *S. cornuta* in the ZMUC collections. *S. cornuta* from Atlantic Spanish coasts, as described by Campoy (1982), has similar falcigers, but the pseudospinigers are indistinctly bidentate, there are no dorsal glands, the body is slender and proportionally longer, dorsal simple setae are not truncate and the solitary posterior aciculae are straight, distally acuminate. *Ehlersia cornuta* as described by Hartman (1945) is similar, but the description omits very important details. The general aspect of the body is similar to *Syllis pallida* Verrill, 1875; however, the compound setae and solitary posterior acicula are very different (see below).

Distribution.—North Carolina.

Etymology.—The species is named in honor of Dr. Mary E. Petersen, ZMUC, who made most of the North Carolina syllids available to me and has given me much useful help and friendship.

Revision of Some Species Described by Verrill

In 1900, Professor A. E. Verrill, eminent researcher and professor at Yale University, published a large paper on worms (Turbellaria, Nemertina and An-

nelida) from Bermuda. In this paper a large number of new species were described, among them several syllids. The following new species of *Syllis* were described: *Syllis* (*Typosyllis*) *corallicola, S. grandigularis, S. catenula, S. jugularis, S.* (*T.*) *diplomorpha, S.* (*T.*) *annularis, S.* (*T.*) *cincinnata, S.* (*Ehlersia*) *exigua,* and *S.* (*E.*) *nitida.* Verrill's descriptions of all these species are largely incomplete and inadequate from a modern point of view; furthermore, the descriptions were not accompanied by any figures. As a result, the syllid species described in that paper are actually indeterminable.

Hartman (1942) reviewed the types of polychaetes in the Peabody Museum (YPM), where Verrill's collection is deposited. About the genus *Syllis* (she used *Typosyllis*), only the species *S. grandigularis, S. nitida, S. corallicola, S. catenula,* and *S. jugularis* were revised; types of the remaining species are probably lost.

Verrill published several papers on the marine invertebrates from New England; one species, *Syllis pallida,* has been revised for comparison with *S. maryae,* and additions to the original description are given here. I have revised the available types of Verrill's species for comparison with the species described here. Some notes about these species are given below.

Syllis cincinnata Verrill, 1900
Figure 10A–F

Syllis (*Typosyllis*) *cincinnata* Verrill, 1900:609.
Syllis cincinnata.—Monro, 1933:252, fig. 6a–e.
Typosyllis cincinnata.—Hartman, 1942:14.

Material Examined.—Holotype (YPM 2976). Cotype (YPM 2977). Fragmented specimen (YPM 1256).

Additions to the Description.—Holotype and cotype are on slides. Both specimens are in very poor condition; the prostomium and pharynx are nearly imperceptible. Dorsal cirri thick, with rectangular articles, wider than long, with reddish inclusions, coiled over dorsum, alternating long cirri with about 19 articles, and short cirri with about 13 articles. Posterior acicula straight, protruding somewhat from parapodial lobe. Because of the thickness of the mount, it was not possible to examine the compound setae under higher magnification (×100); so, the setae have been examined using the ×40 objective; compound setae with thick shafts, distally enlarged, and relatively short, small, slightly bidentate blades (Fig. 10B); slight dorso ventral gradation in length, and similar throughout, except anteriorly where they are somewhat longer and more slender. Solitary dorsal simple seta thin, apparently unidentate.

The fragmented specimen labeled YPM 1256 is probably a different species. It is thick, with dark brown pigment, and with antennae and dorsal cirri coiled over the dorsum. The solitary, posterior aciculae are very thick, protruding distinctly from the parapodial lobes (Fig. 10E). Posterior compound setae have blades with rounded teeth set very close bifid tips, and with long, coarse spines on the cutting margin (Fig. 10F). This specimen may belong to *S. corallicoloides* Augener, 1922, as described by Uebelacker (1984).

Syllis (*Typosyllis*) *grandigularis* Verrill, 1900

Syllis (*Typosyllis*) *grandigularis* Verrill, 1900:604.
Typosyllis grandigularis.—Hartman, 1942:46, figs. 66, 67.

Material Examined.—Type (YPM 2974).

Remarks.—The species is a synonym of *Branchiosyllis exilis* (Gravier, 1900).

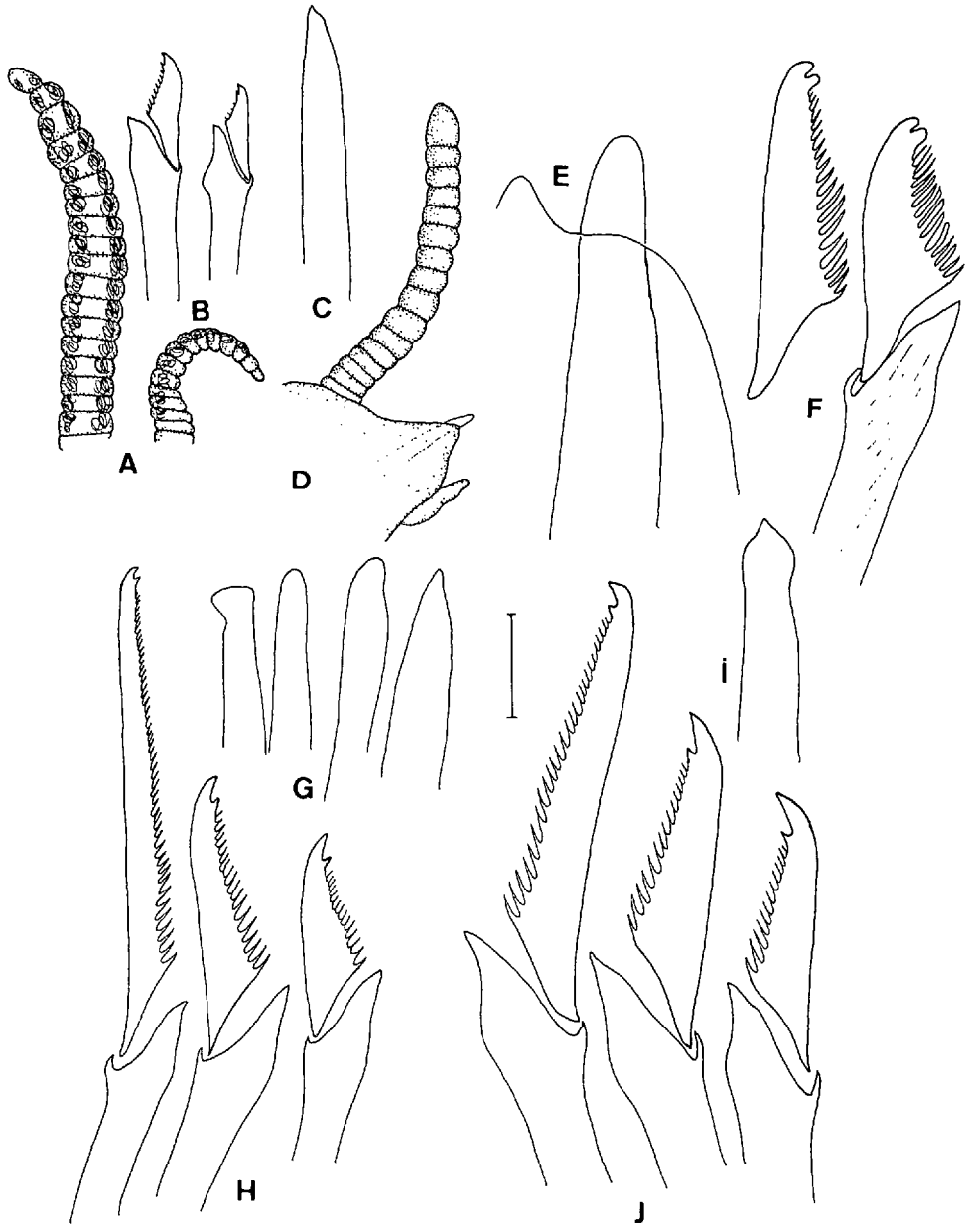


Figure 10. *Syllis cincinnata.* Holotype. A, alternate dorsal cirri, midbody; B, compound setae, medium-posterior; C, acicula, posterior. Fragmentated specimen (YPM 1256): D, parapodium, posterior; E, acicula, posterior; F, compound setae, medium-posterior. *Syllis pallida.* holotype. G, anterior acicula; H, anterior compound setae; I, posterior acicula; J, posterior compound setae. Scale: A–D: 25 μm. E–J: 10 μm.

Syllis (*Ehlersia*) *nitida* Verrill, 1900

Syllis (*Ehlersia*) *nitida* Verrill, 1900:612.

Material Examined.—Type (YPM 2975).

Remarks.—The specimen is in very poor condition. It presents typical setation of *Branchiosyllis exilis*; so, it is also a synonymy of *B. exilis.*

Notes on the Verrill material of *S. corallicola, S. catenula,* and *S. jugularis* are included in the remarks of the above previously described *S. corallicola* from Cuba.

Syllis pallida Verrill, 1875
Figure 10G–J

Syllis pallida Verrill, 1875:39, fig. 6.
Typosyllis pallida.—Hartman, 1942:14.

Material Examined.—Holotype (YPM 2985).

Additions to the Description.—The holotype is in very poor condition but the compound setae and proventriculus are still perceptible. The shafts of the compound setae are smooth; the blades are relatively long, with a curved, acute distal tooth and a much smaller proximal tooth; the spines on the cutting margin are relatively thin and short. The blades of the compound setae of the anterior end are relatively thinner than those of the posterior part of body. They show a marked dorso-ventral gradation in length, blades 40 μm above, 25 μm below in the mid-body. The solitary posterior aciculae are acuminate. The proventriculus has about 30 rows of muscle cells.

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Literature Cited

Acero, M. I. and G. San Martín. 1986. Poliquetos epibiontes del primer horizonte de algas fotófilas en las provincias de Cádiz y Málaga. Estudio faunístico comparado. Bol. R. Soc. Esp. Hist. Nat. 82(14): 5–24.

Alós, C. and G. San Martín. 1987. Descripción de *Syllis ferrani* n.sp.: un nuevo Syllidae (Annelida: Polychaeta) en el Mediterráneo. Publ. Dep. Zool. Barcelona 13: 35–44.

Amoureux, L. 1972a. Annélides Polychètes recueillies sur les pentes du talus continental, au large de la Galice (Espagne). Campagnes 1967 et 1968 de la "Thalassa." Cah. Biol. Mar. 13: 63–89.

———. 1972b. Annélides Polychètes du Maroc. Soc. Sci. Nat. Phys. Maroc. 52: 47–72.

———. 1982. Annélides Polychètes recueillies sur la pente continentale de la Bretagne à l'Irlande, Campagne 1973 de la "Thalassa" (suite et fin) avec la description de quatre espèces nouvelles pour la Science. Cah. Biol. Mar. 23: 29–51.

Amoureux, L., F. Rullier and L. Fishelson. 1978. Systematique et ecologie d'Annélides Polychètes de la presqu'il du Sinai. Israel J. Zool. 27: 57–163.

Augener, H. 1913. Polychaeta I. Errantia. *In* Michaelsen and Hartmeyer, Die Fauna Südwest Australiens. Ergebnise der Hamburger Südwest-Australiens Forschungsreise 1905, 4: 65–304, 42 figs.

———. 1918. Polychaeta. Volume 2(2). Pages 67–625 *in* W. Michaelsen, ed. Beiträge zur Kenntnis Meeresfauna West-Afrikas.

———. 1922. Uber littoral Polychaeten von Westindien. Sitzber. Ges. Naturf Freunde Berlin: 38–63.

Bellan, G. 1964. Contribution à l'étude systématique, bionomique et écologique des Annélides Polychètes de la Méditerranée. Rec. Trav. St. Mar. Endoume 33(49): 1–371.

Ben-Eliahu, N. M. 1977. Polychaete cryptofauna from rims of similar intertidal vermetid reefs on the Mediterranean coast of Israel and in the Gulf of Eilat. Syllinae and Eusyllinae (Polychaeta. Syllidae). Israel J. Zool. 26: 1–58.

Berkeley, E. and C. Berkeley. 1938. Notes on Polychaeta from the coast of western Canada. II. Syllidae. Ann. Mag. N. Hist. ser. 11(1): 39–49.
——— and ———. 1948. Canadian Pacific fauna. 9. Annelida. 9b (1) Polychaeta Errantia: 1–100.
Campoy, A. 1982. Fauna de España. Fauna de Anélidos Poliquetos de la Península Ibérica. EUNSA (Ediciones de la Universidad de Navarra S.A.). 781 pp.
——— and E. Alquézar. 1982. Anélidos Poliquetos de las formaciones de *Dendropoma petaeum* (Monterosato) de las costas del sureste de España. Actas II Simp. Ibér. Estud. Bentos Mar. III: 121–137.
Cantone, G. 1976. Ricerche sul litorale della Somalia. Anellidi Policheti de Bender MTONI e sar UANLE. Ital. J. Zool. supp. 8, 9: 223–254.
Cognetti, G. 1957. I sillidi del Golfo di Napoli. Pubbl. Staz. Zool. Napoli 30: 1–100.
———. 1965. Sillidi mesopsammici delle secche della Meloria (Livorno). Arch. Zool. Ital. 50: 65–72.
Czerniavsky, V. 1881. Materialia ad zoographian Ponticam comparatam. Bull. Soc. Imp. Nat. Moscow 55: 213–363. 56: 338–420. 57: 196–198.
Day, J. H. 1967. A monograph on the Polychaeta of Southern Africa. Part I. British Mus. (Nat. Hist.) 656. 488 pp.
———. 1973. New Polychaeta from Beaufort with a key to all species recorded from North Carolina. NOAA Tech. Rep. NMFS Circ. 375. 140 pp.
Dorsey, J. H. and C. A. Phillips. 1987. A new species of *Syllis* (*Ehlersia*) (Polychaeta: Syllidae) from Southern California, and description of the epitoke and atoke variation in *S.* (*Ehlersia*) *heterochaeta*) Moore, 1909. Biol. Soc. Wash. Bull. 7: 152–161.
Dueñas, P. R. 1981. Inventario preliminar de los poliquetos de aguas someras de la Bahía de Cartagena y áreas adyacentes. Bol. Mus. Mar. Bogotá 10: 82–138.
Estapé, S. and G. San Martín. In press. Descripción de los estolones reproductores de algunas especies de la Subfamilia Syllinae (Polychaeta: Syllidae). Misc. Zool.
Fauchald, K. 1977a. The Polychaete worms. Definitions and keys to the Orders, Families and Genera. Nat. Hist. Mus. Los Angeles County, Sci. Ser. 28. 188 pp.
———. 1977b. Polychaetes from intertidal areas in Panama, with review of previously shallow-water records. Smithsonian Contr. Zool. 221: 1–81.
Fauvel, P. 1923. Faune de France. 5 Polychètes Errantes. Le Chevalier, ed. 488 pp.
Gardiner, S. L. 1976. Errant Polychete Annelids from North Carolina. J. Elisha Mitchell Sci. Soc. 91(3): 78–220.
George, J. D. 1979. The polychaetes of Lewis and Harris with notes on other marine invertebrates. Proc. R. Soc. Edinburg 77B: 189–216.
Gillandt, L. 1979. Zur Systematik, Autökologie und Biologie der Polychaeten des Helgoländen Felslitorals. Mitt. Hamb. Zool. Mus. Inst. 76: 19–73.
Goodrich, E. S. 1900. Observations on *Syllis vivipara* Krohn. J. Linn. Soc. London 28: 105–109.
Gravier, Ch. 1900. Contribution à l'étude des Annélides Polychètes de la Mer Rouge. Nouv. Arch. Mus. Hist. Nat. Paris (4)3: 147–268.
Grube, E. 1846–63. Bechreibung neuer oder wenig bekannter Anneliden. Arch.f. Naturgesch. 12–29.
Hartman, O. 1942. A review of the types of polychaetous annelids at the Peabody Museum of Natural History, Yale University. Bull. Bingham Oceanogr. coll. Peabody Mus. Nat. Hist. 8: 1–98.
———. 1945. The marine Annelids of North Carolina. Bull. Duke Univ. 2: 1–51.
———. 1959. Catalogue of the polychaetous annelids of the world. Part I, II (1959) and Supplement (1965). Allan Hancock Found. Publ., Occ. Paper 23.
———. 1969. Atlas of the errantiate and sedentariate polychaetous Annelids from California. Allan Hancock Foundation, Los Angeles, California. 828 pp.
Hartmann-Schröder, G. 1960. Polychaeten aus dem Roten Meer. Kiel. Meeresf. 16: 69–125.
———. 1965. Zur Kenntnis der eulitoralen Polychaetenfauna von Hawaii, Palmira und Samoa. Abh. Ver. Naturw. ver. Hamburg. (N.F.) 9: 81–161.
———. 1971. Annelida, Borstenwürmer, Polychaeta. Die Tierwelt Deutschlands Gustav Fischer, Verlag, Jena 58. 594 pp.
———. 1979. Zur Kenntnis des Eulitorals der australischen Küsten unter Berüscksichtigung der Polychaeten und Ostracoden. Mitt. Hamburg. Zool. Mus. Inst. 79: 75–218.
———. 1980. Die Polychaeten der Amsterdam-Expeditionen nach Westindien. Bijdragen tot de Dierkunde (Contr. Zool.) 50: 387–401.
———. 1982. Die Polychaeten der subtropisch-antiborealen wetküste Australiens (zwischen Cervantes im Norden und Cape Naturaliste im Süden). Mitt. Hamburg. Zool. Mus. Inst. 79: 51–118.
———. 1983. Zur Kenntnis des Eulitorals der australischen Küsten unter besonderer Berücksichtigung der Polychaeten und Ostracoden. Teil 9. Die Polychaeten der antiborealen Südwestküste Australiens (zwischen Dunsborough im Norden und Denmark im Süden). Mitt. Hambur. Zool. Mus. Inst. 80: 123–167.

Haswell, M. A. 1920. Australian Syllidae, Eusyllidae and Autolytidae. Proc. Linn. Soc. New South Wales 45: 90–112.

Ibarzábal, D. 1986. Lista de especies de poliquetos bentónicos cubanos. Rep. Invest. Inst. Oceanol. 45: 1–17.

———. 1988. Poliquetos de Punta del Este, Isla de la Juventud. II. Familias Phyllodocidae, Hesionidae y Syllidae. Poeyana 359: 1–10.

Imajima, M. 1966. The Syllidae (Polychaetous Annelids) from Japan. IV. Syllinae (2). Publ. Seto Mar. Biol. Lab. 14: 253–294.

——— and O. Hartman. 1964. The Polychaetous Annelids of Japan. Allan Hancock Found. Occ. Paper 26: 1–452.

Jones, M. L. 1962. On some polychaetous annelids from Jamaica, the West Indies. Bull. Am. Mus. Nat. Hist. 124: 169–212.

Katzmann, W. 1973. Polychaeten von sedimentböden der mittleren Adria (50–525 m). Zool. Jb. Syst. 100: 436–450.

Krohn, A. 1852. Ueber die Erscheinungen bei der Fortpflanzung von *Syllis prolifera* und *Autolytus prolifer*. Arch. Naturgesch. 18(1): 66–76.

———. 1869. Ueber ein lebendiggebärend Syllisart. Arch. Naturgesch. 35: 197–200.

Lamarck, J. B. 1818. Histoire naturelle des animaux sans vertèbres. Paris 5: 1–612.

Langerhans, P. 1879. Die Würmfauna von Madeira. IV. Zeits. Wiss. Zool. 32: 513–592.

Laubier, L. 1966. Le coralligène de l'Albères. Monographie biocenotique. Ann. Inst. Océanogr. Monaco 43(2): 137–316.

———. 1968. Contribution à la faunistique du coralligène. VII. A propos de quelques Annélides Polychètes rares ou nouvelles (Chrysopetalidae, Syllidae et Spionidae). Ann. Inst. Océanogr. Monaco 46(2): 8–107.

Marion, A. F. N. and N. Bobretzky. 1875. Études sur les Annélides du golfe de Marseille. Ann. Sc. Nat. Zool. (6 sér.) 2: 1–106.

Martín, D. and G. San Martín. 1988. Presencia de *Syllis torquata* (Syllidae: Polychaeta) en las costas españolas. Publ. Dep. Zool. Barcelona 14: 31–35.

Monro, C. C. A. 1933. On a collection of Polychaeta from Dry Tortugas, Florida. Ann. Mag. Nat. Hist., ser. 10, 12: 244–269.

Moore, P. 1908. Some polychaetous annelids of the northern Pacific coast of North America. Proc. Acad. Nat. Sci. Phila. 60: 321–364.

Núñez, J. 1990. Anélidos Poliquetos de Canarias: Estudio sistemático de los Ordenes Phyllodocida, Amphinomida y Eunicida. Tesis Doctoral (unpublished), Universidad de La Laguna. 610 pp.

——— and G. San Martín. 1991. Two new species of Syllidae (Polychaeta) from Tenerife (Canary Islands, Spain). Bull. Mar. Sci. 48(2): 236–241.

Péres, J. M. 1954. Contribution à l'étude des Annélides Polchyètes de la Méditeranée occidentale. Rec. Trav. Sta. Mar. Endoume (13-8): 83–155.

Perkins, T. and T. Savage. 1975. A bibliography and checklist of polychaetous Annelids of Florida, the Gulf of Mexico, and the Caribbean region. Florida Mar. Res. Publ. 14: 1–62.

Pettibone, M. H. 1963. Marine polychaete worms of the New England region. 1. Aphroditidae through Trochochaetidae. Bull. U.S. Nat. Mus. 227. 356 pp.

Quatrefages, A. de. 1865. Coup d'oeil sur la Famille des Syllidiens. Ann. Soc. Linn. dép. Maine et Loire (7 anné).

Rathke, H. 1843. Beiträge zur Fauna Norvegens. Nov. Act. Acad. Leop. Carol. 20: 1–264.

Rioja, E. 1941. Estudios anelidológicos. III. Datos para el conocimiento de la fauna de poliquetos de las costas del Pacífico de México. An. Inst. Biol. México XII (2): 669–746.

———. 1960. Estudios anelidológicos. XXIV. Adiciones a la fauna de Anélidos Poliquetos de las costas orientales de México. An. Inst. Biol. México XXXI: 289–316.

———. 1962. Estudios anelidológicos. XXVI. Algunos Anélidos Poliquetos de las costas del Pacífico de México. An. Inst. Biol. México XXXIII: 131–229.

Rullier, F. 1963. Les Annélides Polychètes du Bosphore, de la Mer de Marmara et de la Mer Noire, en relation avec celles de la Méditerranée. Rapp. P. V. Reun. Const. Int. Explor. Mer 17: 161–260.

———. 1972. Annélides Polychètes de Nouvelle-Caledonie. Ed. Found. Singer-Polignac. 169 pp.

———. 1974. Quelques Annélides Polychètes de Cuba recueillies dans les Eponges. Trav. Mus. Hist. Nat. "Gr. Antipa" 14: 9–77.

San Martín, G. 1984. Estudio biogeográfico, faunístico y sistemático de los Poliquetos de la Familia Sílidos (Polychaeta: Syllidae) en Baleares. Tesis Doctoral, Editorial de la Universidad Complutense de Madrid. 529 pp.

———. 1986a. *Acanthopale perkinsi* gen. et sp. n. (Polychaeta, Chrysopetalidae) from Cuba and Florida. Zool. Scri. 15(4): 305–312.

———. 1986b. Anélidos Poliquetos procedentes de la I Expedición Cubano-Española a la Isla de la

Juventud y Archipiélago de los Canarreos. II. Familias Chrysopetalidae y Amphinomidae. Rev. Inv. Mar. 7(1): 17–30.

———. 1990. Eusyllinae (Syllidae, Polychaeta) from Cuba and the Gulf of Mexico. Bull. Mar. Sci. 46(3): 590–619.

———. 1991a. *Sphaerosyllis* and *Parapionosyllis* (Exogoninae, Syllidae, Polychaeta) from Cuba, Florida and the Gulf of Mexico. *In* M. E. Petersen and J. B. Kirkegaard, eds. Systematics, biology and morphology of World Polychaeta. Ophelia Suppl. 5: 231–238.

———. 1991b. Syllinae (Polychaeta: Syllidae) from Cuba and the Gulf of Mexico. Bull. Mar. Sci. 48(2): 227–235.

———. 1991c. A new species of *Pionosyllis* Malmgren, 1887 (Polychaeta: Syllidae: Eusyllinae), from Cuba. Graellsia 47: 17–20.

———. 1991d. *Grubeosyllis* and *Exogone* from Cuba, Puerto Rico, Florida and the Gulf of Mexico, with a revision of *Exogone*. Bull. Mar. Sci. 49: 715–740.

———. In press. Anélidos Poliquetos procedentes de la I Expedición Cubano-Española a la Isla de la Juventud y Archipiélago de los Canarreos. V. Familia Nereididae. Rev. Inv. Mar.

San Martín, G., O. Aguirre and L. Baratech. 1986. Annélidos Poliquetos procedentes de la I Expedición Cubano-Española a la Isla de la Juventud y Archipiélago de los Canarreos. I. Familias Polynoidae, Sigalionidae, Pholoididae y Pisionidae. Rev. Inv. Mar. 7(1): 3–16.

——— and S. Major. 1988. Anélidos Poliquetos procedentes de la I Expedición Cubano-Española a la Isla de la Juventud y Archipiélago de los Canarreos. III. Familias Dorvilleidae, Arabellidae, Lumbrineridae y Eunicidae. Rev. Inv. Mar. 93 (3): 3–13.

——— and C. Gómez Esteban. In press. Anélidos Poliquetos procedentes de la I Expedición Cubano-Española a la Isla de la Juventud y Archipiélago de los Canarreos. IV. Familias Hesionidae, Pilargidae, Glyceridae y Phyllodocidae. Rev. Inv. Mar.

——— and J. M. Viéitez. 1984. Anélidos Poliquetos de los rizomas de *Posidonia oceanica* en las costas de Cabo de Palos (Murcia, España) Int. Workshop *Posidonia oceanica* beds, C. F. Boudouresque, A. Jeudy de Grissac & J. Olivier, edit., G.I.S. Posidonie Publ, Marseille 1: 149–157.

Uebelacker, J. M. 1982. Review of some little-known species of Syllids (Annelida: Polychaeta) described from the Gulf of Mexico and Caribbean by Hermann Augener in 1924. Proc. Biol. Soc. Wash. 95(3): 583–593.

———. 1984. Family Syllidae Grube, 1850. Vol. 4, chapter 30: 30-1 to 30-151. *In* J. M. Uebelacker and P. G. Johnson, eds. Taxonomic guide to the polychaetes of the Northern Gulf of Mexico. Prepared for the U.S. Department of the Interior, Minerals Management Services, Barry A. Vittor and Associates, Mobile, Alabama.

Uschakov, P. V. 1955. Polychaeta of the Far Eastern Seas of the U.S.S.R. Academy of Sciences of the Union of Soviet Socialist Republics. 433 pp. (In Russian; translated in 1965 by the Israel Program for Scientific Translations, Jersualem.)

Verrill, A. E. 1875. Results of dredging expeditions off the New England coast in 1874. No. 2. Amer. J. Sci. New Haven, ser. 3, 10: 36–43.

———. 1900. Additions to the Turbellaria, Nemertina, and Anneiida of the Bermudas, with revisions of some New England genera and species. Trans. Conn. Acad. Arts Sci. 10: 595–671.

Westheide, W. 1974. Interstitielle Fauna von Galapagos. XI. Pisionidae, Pilargidae, Syllidae. Mikrofauna Meeres. 44: 195–338.

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